1978 *The beginning...*

Ganga Hospital was founded in the year 1978 by Dr.J.G.Shanmuganathan and Mrs. Kanakavalli Shanmuganathan. Due to the dedicated work of Dr.J.G.Shanmuganathan and administrative skills of Mrs. Kanakavalli Shanmuganathan, the hospital grew steadily over the years. In 1991, Ganga Hospital was converted into a speciality centre for Trauma, Orthopaedics, Spine, Plastic and Micro Vascular surgery, following the return of their sons Dr. S.Rajasabapathy and Dr.S.Rajasekaran who had completed their speciality training abroad.

Soon, a highly skilled and dedicated team of Orthopaedic, Plastic and Anaesthesiologists was formed, which made the hospital a reputed and preferred centre for Trauma, Orthopaedics and Plastic Surgery.

1978	:	THE JOURNEY BEGAN…
1978	:	Ganga Hospital started as a 17 bed Poly Clinic.
August 1991	:	Establishment of Shanmuganathan Kanakavalli Super Speciality Centre for Trauma, Orthopaedics & Plastic Surgery. Expanded to 45 beds with 2 new Operating Theatres
Sept. 1991	:	First replant of amputated hand
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
August 1994	:	First International Course on Spine Surgery with live demonstration of surgeries
June 1995	:	Basic Nursing Course - Approved by the Department of Human Resource Development, Govt. of Tamil Nadu
January 1997	:	Recognized 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	:	Recognized by World Orthopaedic Concern (WOC) for Inland Training Fellowships
May 2000	:	Establishment of 'Ganga Micro Surgical Training Institute'
June 2000	:	Recognized for Super-Speciality Fellowship in Spine Surgery by the National Board
August 2000	:	"Save the Working Hand Project" Matching Grant Programme of Rotary Metropolis.
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
Nov. 2002	:	Bruce Bailey Fellowship
Dec. 2002	:	Ganga Charitable Trust for Orthopaedic Research and Education
January 2003	:	"Ganga Hospital Carl - Zeiss Fellowship" in Microsurgery.
January 2003	:	Ganga Hospital Silicon Prosthetic Centre for cosmetic finger prosthesis
March 2003	:	7th floor expansion. Total bed strength : 130

GANGA HOSPITAL

2003 *The journey continues...*

Ganga Hospital's steady progress over the years is the direct result of the confidence and goodwill of patients and the support of numerous referring doctors. With the grace of the Almighty, Ganga Hospital will continue to serve society in a greater measure in the years to come.

Staff

The Department's strength lies in its staff who have strived to be the best in their fields through constant training and upgrading of skills. The guiding philosophy has been to achieve the best clinical results for patients by individual excellence and collective teamwork and to strictly adhere to medical ethics and values.

The department is well staffed with 3 consultants, 1 senior registrar, 1 registrar, 2 spine fellows, 2 trauma fellows, 3 tutors in orthopaedic surgery and 6 postgraduates.

The unit is headed by Dr.S.Rajasekaran. He was the best outgoing student of Coimbatore Medical College and stood first in the University of Madras in the orthopaedic post graduate examinations. He completed FRCS in Edinburgh and topped the University of Liverpool in the M.Ch orthopaedic examinations, winning both the University Medals. He has a PhD in Spinal Tuberculosis. For this work he was awarded the 'Tamil Nadu Scientists Award' by the Government of Tamil Nadu, the prestigious Dr. B.C. Roy Silver Jubilee 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.

Dr.S.Rajasekaran
M.S. (Ortho)., Dip. NB (Ortho)., F.R.C.S.(Ed)., M.Ch (Liverpool)., Ph.D.

Current Positions

President Elect of 'World Orthopaedic Concern', UK
Regional Member Representative for West Asia of the 'Asia Pacific Orthopaedic Association'
Chairman, Trauma Section of the Asia Pacific Orthopaedic Association
Secretary, Association of Spine Surgeons of India
Executive Committee Member, Tamil Nadu Orthopaedic Association
Deputy Editor, SPINE, Indian Edition
President, Association of British Scholars, Coimbatore

Special Interests

Spine Surgery
Trauma and
Orthopaedic Research

- Strengthened by skills
- Powered by team work
- Guided by values

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. He is also one of the Executive Committee Members of the World Orthopaedic Concern International.

Special Interests: Trauma, Shoulder and Joint Replacement 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 won the Prof T.K. Shanmugasundaram Gold Medal of Tamil Nadu Orthopaedic Association in 1995 for his presentation on 'Monomelic Polytrauma'. He is also the recipient of the Japanese Orthopaedic Association Traveling Fellowship Award for 2003.

Special Interests: Trauma and Spine Surgery.

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

Dr. S.R.Sundararajan joined the department in 1995 and became a Senior Registrar in 2001. His special interests are Trauma, Arthroscopy and Knee Surgery and he has been undergoing Advanced Training in Arthroscopy at Flinders Medical Centre, Australia since July 2002. He will rejoin the unit in June 2003.

Spine Fellows

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 Exam conducted by the National Board and the two year course is open to both Orthopaedic and Neuro surgeons. The fellows have both clinical and research tasks, along with the responsibility for maintaining accurate and systematic documentation of clinical cases. Participation in teaching programmes, presentation of the department's work at scientific fora and clinical research work leading to national and international publications, are also a part of the curriculum. In the second year, hands-on surgical training is offered under supervision and guidance.

Dr. I Ramakanth Rao was the recipient of the Asia Pacific Orthopaedic Association Traveling Spine Fellowship

Dr. I. Ramakanth Rao & Dr. Yogesh Pithwa, Spine Fellows

Trauma Fellows

The Trauma Fellows are primarily responsible for accurate documentation and record maintenance of the large number of trauma patients. The fellows are exposed to more than 3500 major limb trauma every year and participate actively in ward management & surgical treatment of these patients. The 1year trauma fellowship receives ample funding and has enabled important research on various management options in the fields of open injuries of limbs, general trauma and interlocking nails since 1995.

Dr. B.C. Bhanu Prakash & Dr. J. Naresh Babu, Trauma Fellows

Department of Anaesthesia

The department of anaesthesia offers round-the-clock comprehensive peri-operative care for all patients and forms the backbone of the unit. Dr. V.Ravindra Bhat, M.D., DA, DNB, joined as a consultant in 1993 and had his anaesthesia training in Coimbatore and Madras Medical College. He was the co-chairman of the scientific committee of ISA National Conference 2002 held at Coimbatore. Dr.C.Sekhar, MD had his training from KMC, Manipal and joined as a consultant in July 1995. His area of interest is anaesthesia for major spine surgeries. Dr. J.Balavenkata Subramanian, MD, DA had anaesthesia training from PGI, Chandigarh and BJ Medical College, Pune. He 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 joined as registrar in 2000.

Dr.V.Ravindra Bhat, Dr.Maheshwari S.Kumar, Dr.J.Balavenkata Subramanian and Dr.C.Sekhar

Clinical Activities

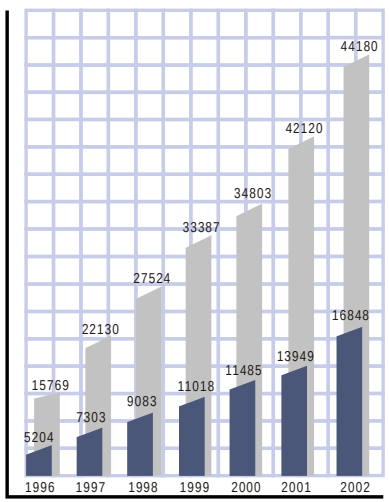
The department's activities constitute an admirable blend of high quality clinical care, focus on academics and adequate research in clinical and basic orthopaedic sciences. Despite the high clinical load, the senior staff maintain high performance standards through compulsory periodic training at leading centres around the world and participation in numerous educational meetings.

Clinical work has steadily increased every year from its inception in 1991. The total outpatient strength, which was 15,769 in 1996, increased to 42,120 in 2001. The orthopaedic inpatient strength similarly increased from 1289 in1996 to 3132 in 2001. With new inpatient registrations of 16,848 and inpatient strength of 3542 in the year 2002, the department stands as one of the largest units dedicated to the field of orthopaedic surgery in our country.

The outpatient department functions 365 days a year with continuous consultant cover. The casualty is maintained by a team of surgeons supervised by a senior registrar and consultant. A spacious outpatient department with adequate nursing staff and plaster technicians, supported by secretarial and paramedical staff allow for a high turnover of patients. Elective surgical list and emergency lists are performed every day. The department has 3 well-equipped theaters, each individually equipped with image intensifiers, Carl Zeiss operating microscopes and a complete series of instrumentation and implants for all possible spine and trauma surgery.

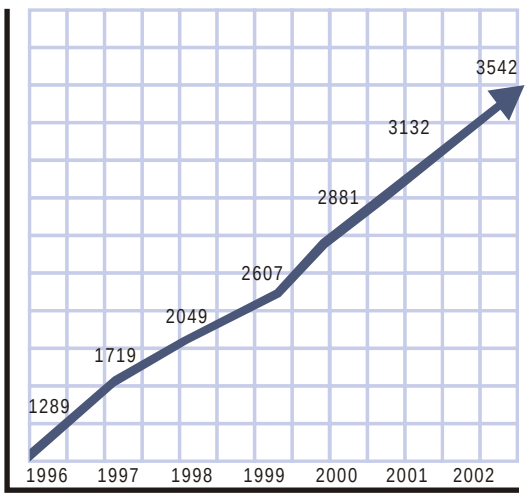
The Out- patient department

Clinical teaching in progress



Out Patient Registration

New Patients Total Number of Out Patients



Orthopaedic Admissions

Trauma

Round-the-clock availability of an orthopaedic team skilled in all forms of trauma management, a plastic surgical team with expertise in micro surgery, operating theatres fully equipped with state of the art instrumentation and implants, the support of 4 full-time anaesthesiologists, and highly trained nursing and paramedical staff have helped the unit to become a tertiary referral centre for trauma patients. Over 3500 major limb injuries are treated every year, of which nearly 1800 are hand and foot trauma. The unit offers intensive care facility with provision for ventilatory support and cardio-thoracic, general and neurosurgeons are on call for patients with systemic injuries.

The team work between the departments of orthopaedics and plastic surgery has helped to set new trends in the treatment of open and mutilated injuries of the limbs. Immediate reconstruction in patients with bone and soft tissue defects have helped to improve results and reduce hospital stay and costs to patients. Many limbs which would otherwise result in amputation have been successfully saved by combined aggressive management.

The rich clinical experience has led to research on various aspects of trauma management.

Intensive Care Unit

A mangled Grade III C open injury of the lower limb which otherwise would have been amputated, treated by vascular repair, soft tissue procedure and bone transport, resulting in a good functional result.

Trauma Surgery

Trauma Surgery	1998	1999	2000	2001	2002
Interlocked Nailing	213	370	345	373	414
Plate Osteosynthesis	183	270	217	363	450
Hip Fractures	131	207	217	187	273
Major Open Injuries	170	210	227	172	183
Major Pelvic Fractures	9	15	13	29	34
Knee Injuries	174	200	186	178	268
Distal Forearm Fractures	131	170	160	185	330
Shoulder Injuries	58	62	77	68	67
Limb Reconstruction for Bone Loss	11	14	20	64	53
Miscellaneous Fractures	620	750	779	843	870

Research Contributions - Trauma

Immediate reconstruction of open injuries of limbs with bone and soft tissue defects

Mangled extremities with major bone and soft tissue loss are the ultimate challenge for trauma surgeons. Even in the best trauma centres in the world, reconstruction is performed in a staged fashion which increases the treatment time, the number of surgeries and the cost of treatment. The rate of complications including infection is also high with poor functional outcome.

The trauma team of Ganga Hospital has evolved new concepts by performing immediate one stage reconstruction of all bone and soft tissue defects. This concept has helped to reduce infection and other complications, decrease number of secondary procedures and improve the functional results. This innovative concept has earned the department much recognition and has attracted fellows from the other states in the country & abroad.

A major blast injury of the lower limb has been salvaged by combined immediate reconstruction.. The patient was on his feet and returned to his agricultural work early.

A major crush injury of the upper limb which otherwise would have resulted in amputation has been salvaged by immediate combined reconstruction enabling the patient to return back early to his normal activities

Awards - International

SICOT Paper Award for presentation at the SICOT Meeting, San Diego, USA, Aug 2002.
Topic : *Immediate Total Reconstruction of Limbs in Open Injuries*
Dr.S.Rajasekaran, Dr S Rajasabapathy, Dr J Dheenadhayalan and Dr Ajoy Prasad Shetty

ORMED Indo-German Orthopaedic Foundation Award for Best Orthopaedic Research Presentation, Hyderabad, 1997
Topic : *How far can we go on Day One Reconstruction in Open Injuries?*
Dr.S.Rajasekaran and Dr S Rajasabapathy

Awards - National

A A Mehta Gold Medal for the Best Paper Presentation, Indian Orthopaedic Association - Kochi - November 1997
Topic : *Primary Total Reconstruction in Open Injuries*
Dr S Rajasekaran, Dr.S.Rajasabapathy and Dr J Dheenadhalayan

T K Shanmugasundaram Gold Medal for the Best Paper Presentation, Tamil Nadu Orthopaedic Association Conference, Madras. 1996
Topic : *Monomelic Polytrauma- Management Challenges*
Dr Ajoy Prasad Shetty, Dr S Rajasekaran and Dr S Rajasabapathy

Salient Presentations on Immediate Reconstruction

International

Royal National Liverpool Hospital May 1994 M.Ch Orth. Guest Lecture, University of Liverpool
Topic: " *Management of Mangled Injuries of Limbs*"
Dr S Rajasekaran and Dr S Rajasabapathy

Kleinert Institute Of Hand And Microsurgery, Louisville Kentucky, USA. June 1997
Topic: "*One Stage Reconstruction of Open Injures of Limbs*"
Dr.S.Rajasekaran and Dr S Rajasabapathy

Nuffield Orthopaedic Center, Oxford UK. June 1997
Topic: "*Difficult Reconstruction Options in Mangled Extremities*"
Dr S Rajasekaran and Dr S Rajasabapathy

12th Congress Western Pacific Orthopaedic Association, Fukuoka Japan , November 1998
Topic: "*Early vs Staged Reconstruction of Soft Tissue and Bone Defects in Open Injuries of Limbs - A 4 Year Prospective Study of 107 Fractures*"
Dr S Rajasekaran, Dr S Rajasabapathy and Dr.J.Dheenadhayalan

Asian Federation of Orthopaedics and Trauma, Madrid. February 1999
Topic: "*Early vs Staged Reconstruction of Open Injuries of Limbs*"
Dr S Rajasekaran and Dr S Rajasabapathy

SICOT, Syndey, Australia, April, 1999.
Topic: "*Day One Reconstruction of Soft Tissue and Bony Defect in Mangled Extremities - A 4 Year Prospective Study*"
Dr S Rajasekaran and Dr S Rajasabapathy

Asia Pacific Orthopaedic Association - 13th Triennial Congress, April, Adelaide, Australia, 2000
Topic: "*Day One Reconstruction of Soft Tissue & Bony Defects in Mangled Extremities- A 4 Year Prospective Study*"
Dr S Rajasekaran and Dr S Rajasabapathy

Bangladesh Orthopaedic Society, Annual Meeting, Dacca, February 2002
Topic: "*Management Of Open Injuries*"
Dr S Rajasekaran and Dr S Rajasabapathy

SICOT Meeting at San Diego, USA, August, 2002
Topic: "*Immediate Total Reconstruction of Limbs in Open Injuries*"
Dr S Rajasekaran and Dr S Rajasabapathy

National

ORTHOCON'94, Coimbatore, November 1992
Topic: *"Limb Salvage in Grade III B & C Open Limb Injuries"*
Dr S Rajasekaran and Dr S Rajasabapathy

Tamil Nadu Orthopaedic Association, February 1993
Topic: "*Team Approach to Management of Limb Threatening Open Injuries*"
Dr S Rajasekaran and Dr S Rajasabapathy

Kerala Orthopaedic Association, Annual Meeting Guest Lecture Manjeri. 1995
Topic: "*Aggressive Management of Open Injuries to Limbs*"
Dr S Rajasekaran and Dr S Rajasabapathy

Symposium ORTHOCON September 1996
Topic: "*Avoiding Complication/Pitfalls in the Management of Compound Injuries*"
Dr S Rajasekaran

Tamil Nadu Orthopaedic Association, 1996 Chennai
Topic: *"Management of Upper Limb Monomelic Polytrauma with Neurovascular Problems*"
Dr S Rajasekaran and Dr S Rajasabapathy

Indo German Orthopaedic Association, Coimbatore. July 1997
Topic: *"What to do with Skeletal Injuries in Open Injuries?*"
Dr J. Dheenadhayalan and Dr S Rajasekaran

Indian Orthopaedic Association Conference - Kochi - November 1997
Topic: "*Primary Internal Fixation Compound Injuries*"
Dr S Rajasekaran

Tamil Nadu Orthopaedic Association of India, Coimbatore, Guest Lecture, February 2002
Topic: " *Avoiding Pitfalls in Management of Open Injuries*"
Dr S Rajasekaran

Instructional Course Lectures IOAICL 2002, Guest Lecture , Madurai, April 2002
Topic: " *Decision Making in Open Fractures of Limbs*"
Dr S Rajasekaran

Indian Orthopaedic Association Annual Meeting, Patna, November, 2002
Topic: "*Decision Making in Open Injuries in Orthopaedics Workshop"*
Dr S Rajasekaran

Research Contributions - Trauma

Primary Bone Grafting in Open Injuries

Bone loss in open injuries is a difficult problem and is associated with a high incidence of non unions, infections and multiple secondary procedures to achieve bone union. Staged bone reconstruction is performed after a period of 12 weeks following soft tissue cover. This has the disadvantage of prolonged treatment time, increased rate of non-union, higher number of secondary procedures and increased cost of treatment. The possibility of immediate soft tissue cover led to the possibility of immediate primary bone grafting thereby reducing the number of additional surgeries and treatment time. In a prospective study of 616 patients with open injuries, primary bone grafting was possible with a high degree of safety in 60 patients. The experience has led to the adoption of this innovative management protocol in more than 200 patients.

A Grade III B open fracture of the right leg treated by immediate thorough debridement, interlocked nailing, primary bone grafting and primary skin closure with a successful outcome. This is an innovative concept pioneered by the Ganga trauma team, which reduces the cost, the hospital stay, number of secondary procedures required, and gives optimal functional outcome at the earliest.

Publications

Primary Bone Grafting in Open Injuries of Limbs with Bone Deficit - A Prospective Study in 60 Patients
Journal of Tamil Nadu Orthopaedic Association, Volume 28 page no. 55-62, 2002
Dr. A.B.Rajendra Babu, Dr S Rajasekaran and Dr.S. Rajasabapathy

Presentations

Indo German Orthopaedic Association, Hyderabad. July 1997
Topic*: "Can Reconstructive Procedures for Soft Tissue and Bony Defect be Safely Performed on Day One in Open Injuries?- A 4 Year Prospective Study of 107 Fractures*"
Dr S Rajasekaran and Dr.S. Rajasabapathy

Tamil Nadu Orthopaedic Association, 2002, Coimbatore
Topic "*Primary Bone Grafting in Open Injuries of Limbs with Bone Deficit - A Prospective Study in 60 Patients"*
Dr. A.B.Rajendra Babu, Dr S Rajasekaran and Dr.S. Rajasabapathy

A Grade III B open fracture of the right leg treated by immediate thorough debridement, interlocked nailing, primary bone grafting & primary skin closure with a successful outcome.

Research Contributions - Trauma

The Role and Safety of Primary Closure in Open Injuries

Primary closure in open injuries is still taboo due to the fear of infection. Early transfer to hospitals, improvement in the art and science of debridement, the immediate start of treatment and the availability of powerful antibiotics has led to the possibility of primary closure in a highly select group of patients who arrive very early to the hospital, have no skin loss either during injury or debridement and have no systemic complications. In a pilot study of 140 open injuries, primary closure was possible with a high level of safety in about 33 % of patients. Subsequently, primary closure has been performed in more than 300 patients and the experience has helped to formulate definite indications for the procedure.

A Grade III B injury of the leg with no skin loss treated by debridement, internal fixation and primary skin closure, with good results.

Primary Closure - Indications

- Wound debridement performed within 8 hours of injury
- No skin loss primarily or during debridement
- Wounds with no major contamination
- No systemic or metabolic complications
- Skin approximation possible without tension

Crush injury of the elbow with dislocation exposing the bone, managed by immediate debridement and primary closure with good functional outcome

Publications

Primary Closure in Open Fractures- A Prospective Study
Journal of Tamil Nadu Orthopaedic Association, Volume 28 Pg No: 55-62, 2002
Dr.R.Krishna Kumar, Dr.S. Rajasekaran and Dr.J. Dheenadhayalan

Presentations

Asia Pacific Orthopaedic Association 13th Triennial Congress, Adelaide, Australia, April 2000
Topic : "*Primary Closure of Open Injuries*"
Dr. S. Rajasekaran

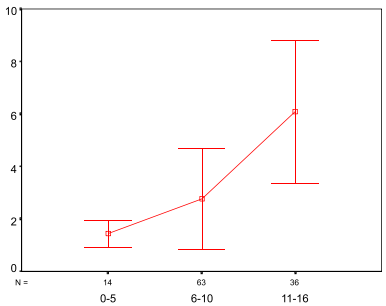
TNOA Annual Conference, 2000 - Trichy
Topic "*Primary Closure in Open Fractures - Advantageous or Adventurous? - A Prospective Study of 140 cases*"
Dr.R. Krishna Kumar, Dr.S. Rajasekaran & Dr.J. Dheenadhayalan

Research Contribution - Trauma

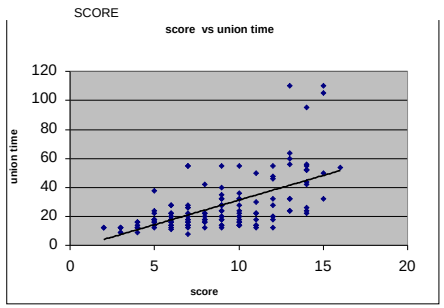
A Comprehensive Trauma Score To Prognosticate Outcome in Grade III B Open Injuries of Limbs

Although Gustilo's classification of open injuries is the most widely used classification, its use is restricted to a gross estimate of the need for soft tissue cover. It suffers from a high inter and intra observer variability and inability to prognosticate the important parameters of the rate of infection, the number of secondary procedures required, the time for bony union and the cost of treatment. The experience of treating more than 150 type III B open injuries every year has facilitated the development of a new score for evaluating the severe injuries. Assessment of severity of the injury to all 3 components of the injured limb (covering tissues, functional tissues and the bone and joints) and inclusion of co-morbid factors form the highlights of the score. The score has been validated and found to predict with a great degree of accuracy the prognosis and functional outcome in major limb injuries.

No. Secondary Procedures



Bone Union Time



Patients were divided into 4 groups. Group I (Score < 5). Group II (Score 6 - 10). Group III (Score 11 - 15). Group IV (Score > 15). All patients in group IV underwent amputation. The results showed that there was a progressive and significant difference ($p<0.001$) between the other 3 groups in bone union time and need for soft tissue cover.

GANGA Hospital Open Injury Severity Score

Covering Structures: Skin and Fascia	Score
Wound not over the bone. No skin loss	1
Wound not over the bone with skin loss	2
Wound over the bone. No skin loss	3
Wound over the bone with skin loss/Friction burns/Degloving over the bone	4
Circumferential wound with bone circumferentially exposed	5

Functional Tissues: Musculotendinous & Nerve units	
Exposed musculotendinous(MT) units	1
Repairable injury to MT units	2
Crushing with loss / Irreparable injury to MT units/Repairable nerve injuries	3
Loss of one compartment of MT units/ Irreparable nerve injuries	4
Loss of two or more compartments / Subtotal amputation	5

Structural Tissues: Bone and Joints	
Transverse / oblique fracture with periosteal stripping	1
Butterfly fragment / Unicortical comminution	2
Periarticular comminution with joint disorganisation	3
Circumferential comminution / Bone loss < 4 cm	4
Bone loss > 4 cm / Segmental fracture with bone loss	5

Co-morbid Conditions: Add 2 points for each condition present

1. Open Injury > 12 Hrs.
2. Sewage contamination / farmyard injuries
3. Age > 65 yrs
4. Debilitating diseases (DM, COPD, IHD etc.)
5. Fat embolism
6. Associated systemic injuries
7. Another major injury to the same limb

Presentations - International

SICOT Meeting, San Diego, USA. Aug 2002.
Topic: "*Immediate Total Reconstruction of Limbs in Open Injuries*"
Dr.S.Rajasekaran, Dr S Rajasabapathy, Dr.P.V.Manoj Kumar, Dr J Dheenadhayalan and Dr Ajoy Prasad Shetty

Presentations - National

Indian Orthopaedic Association - CME Patna, 2002

Topic: *"Prognostic Score for Open Injuries of Limbs - Ganga Open Injury Severity Score "*
Dr.S.Rajasekaran, Dr.S Rajasabapathy, Dr.P.V.Manoj Kumar, Dr.J.Dheenadhayalan & Dr Ajoy Prasad Shetty

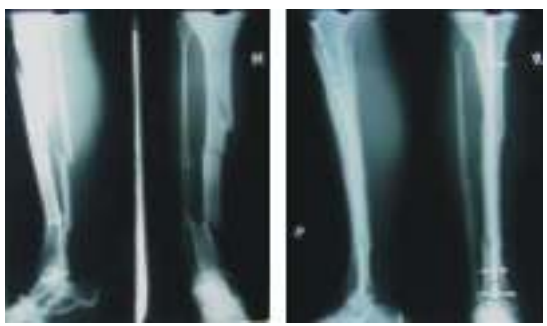
Kerala Orthopaedic Association - Cochin, Jan 2003

Topic: *"Prognostic Score for Open Injuries of Limbs - Ganga Open Injury Severity Score "*
Dr.S.Rajasekaran, Dr.S Rajasabapathy, Dr.P.V.Manoj Kumar, Dr J Dheenadhayalan & Dr Ajoy Prasad Shetty

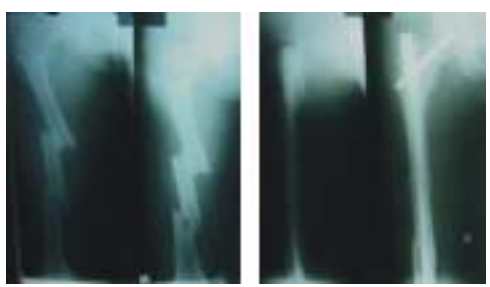
Interlocking Nails

The technique of Interlocking Nails has become the gold standard in the treatment of long bone fractures of limbs. From 1992 this technique has been used extensively in Ganga Hospital for the treatment of all long bone fractures. The number of interlocking nails performed was 345 in the year 2000; 373 in the year 2001 and 414 in 2002. The high clinical load and the vast expertise has allowed many modifications in the techniques which have been widely presented.

Dr. Rajasekaran and Dr. Dheenadhayalan have also been on the faculty of many hands-on workshops and live surgical demonstrations for interlocking nails.



A double segmental fracture of the leg treated with Interlocked Nailing with good results



A double segmental fracture of the thigh bone treated with Interlocked Nailing which is the gold standard in the treatment of long bone fractures

Awards - International

PROF. M. Natarajan GOLD MEDAL for the best paper, Tamil Nadu State Orthopaedic Annual Conference, Erode 1995
Topic " *Interlocking Nail in Difficult Situations* "
Dr S Rajasekaran

Publications

Interlocked Nailing Controversies
Recent Trends in Fracture Management, 2001, Edited by Dr.D.K.Taneja
Dr. I Ramakanth Rao and Dr.S.Rajasekaran.

Analysis of Changes in Compartment Pressure in Reamed Interlocking Nailing of Closed Tibial Fractures
Journal of Tamil Nadu Orthopaedic Association Volume 28 Pg : No: 35-39, 2002
Dr.S.Rajasekaran, Dr.B. Naveen Kumar and Dr.C. Sekar

Salient Presentations on Interlocking Nails

National

Continuing Medical Education Programme of Madurai Medical College Madurai 2001
Topic:" *Controversies in Intramedullary Nailing"*
Dr J Dheenadhayalan

Howrah Orthopaedic Society Meeting, Howrah, Kolkata, October 2002
Topic*:* "*SIRUS Nail- Techniques*"
Dr S Rajasekaran

Howrah Orthopaedic Society Meeting, Howrah, Kolkata, October 2002
Topic*:* "*SIrus-Technical Tips*"
Dr S Rajasekaran

Howrah Orthopaedic Society Meeting, Howrah, Kolkata, October 2002
Topic *: "Intramedullary Nailing of Tibia"*
Dr J Dheenadhayalan

Tamil Nadu Orthopaedic Association Conference 2002 Coimbatore May 2002
Topic*: "Avoiding Pitfalls in Interlocking Nailing"*
Dr J Dheenadhayalan

Indian Orthopaedic Association Annual Meeting, Patna, Nov. 2002
Topic*:* "*Interlocking Nail for Compound Tibial Shaft Fractures"*
Dr S Rajasekaran

Indian Orthopaedic Association Annual Meeting, Patna, Trauma Society of India Sub-speciality Meeting, November 2002
Topic:: "*Use Of Intramedullary Nail In Proximal Femoral Fractures*"
Dr S Rajasekaran

Tamil Nadu Orthopaedic Association, Erode 1995
Topic*:* "*Interlocking Nailing in Demanding Situations*"
Dr S Rajasekaran

Orthopaedic Research & Education Foundation, Patna, September 2001
Topic : "*Controversy and Pitfalls of Interlocking Nail*"
Dr S Rajasekaran

National

National Post Graduate Lecture Course at IOACON 2001, Ahmedabad, December 2001
Topic *:* "*Intra-Medullary Nailing Femur*"
Dr S Rajasekaran

SIRUS Nail, IOACON 2001, Ahmedabad, December 2001
Topic "*Indian Experience Femur*"
Dr S Rajasekaran.

SIRUS Nail, IOACON 2001, Ahmedabad, December 2001
Topic "*Indian Experience Tibia*"
Dr S Rajasekaran

Symposium: Locking Nails in Proximal Femoral Fractures, IOACON 2001, Ahmedabad, December 2001
Topic*:* "*SIRUS Nail for Proximal Femural Fractures"* .
Dr S Rajasekaran

International

Bangladesh Orthopaedic Society , Annual Meeting, Dacca, February 2002
Topic "*Avoiding Pitfalls In Interlocking Nailing*"
Dr S Rajasekaran

Spine Surgery

One of the main thrusts of the orthopaedic department has been in the field of spine surgery. From 1991, the unit introduced and popularized many procedures in the region, such as Microdiscectomy, Micro Surgery for removal of spinal tumors, Complex Spinal fixations using anterior and posterior approaches and single and double stage corrections for Complex Spinal deformities. State-of-the-art facilities and equipment including Carl Zeiss operating microscopes and various forms of spinal fixation systems are available. The unit now handles more than 5,000 new out patients, performs more than 350 major spinal surgeries per year and functions as a comprehensive tertiary referral centre for all spinal problems from the cranio vertebral junction to the sacrum.

In 2001, the unit was recognized by the National Board of Examinations, New Delhi for Super-Speciality training in spinal surgery. The two year fellowship is open to both orthopaedic and neuro surgeons who have completed either MS or D.NB in Orthopaedic Surgery and M.Ch in Neurosurgery. In 2002 the Ganga-Johnson & Johnson Spine Fellowship was started following the visit of Mr. William D Dearstyne, Mr.Supratim Bose, Vice Presidents, Johnson & Johnson International. From 1998, the unit is recognized by the World Orthopaedic Concern for short term fellowships for spine surgery. More than 20 fellows from all parts of India, Indonesia, Sri Lanka and China have undergone training so far.

Active pre-conference clinical discussion by the faculty of ICS-2

Courses Conducted

Course Conducted	Year
International Course on Spine Surgery - 1	1994
International Course on Spine Surgery - 2	1996
International Course on Spine Surgery - 3	1998
International Course on Spine Surgery - 4	2000
Instructional Course on Spine Surgery - 1 Low Back Pain	2002
Instructional Course on Spine Surgery - 2 Spinal Deformaties	2002

The spine unit has also remained in the forefront in conducting instructional courses, hands-on workshops and live surgery demonstration teaching sessions. These courses are some of the most popular scientific meets in the country and have had pioneers in the field of spine surgery from around the world to share their wealth of knowledge and experience.

Surgeries Performed

Surgeries	1998	1999	2000	2001	2002
Surgeries for disc including Microdiscectomy (Only Lumbar)	81	93	91	101	142
Scoliosis & Kyphosis Correction	20	19	23	24	27
Spinal Infections	2	3	17	23	18
Spondylolisthesis	32	25	37	50	60
Tumour Surgery	10	16	8	12	20
Cervical Spine Surgery	25	27	36	38	40
Spine Fractures	-	18	34	25	39
Miscellaneous	8	17	7	10	12
Total	178	218	253	283	358

Research Contribution-Spine

Deformity in Spinal Tuberculosis : its understanding and prevention

Many patients with spinal tuberculosis, especially children end up with severe deformity. This is not only cosmetically disfiguring but also has the potential for late onset paralysis of limbs and cardio respiratory compromise. The patterns of progress of deformity and the predisposing factors for spinal collapse were not known. A 15-year longitudinal study on children with spinal tuberculosis was performed on patients at the Tuberculosis Research Centre, Chennai. These children formed a part of the MRC group of the Madras study of Tuberculosis of Spine. This study which has the longest follow up in the world for this difficult problem helped to identify three patterns of progress in deformity with growth. The importance of instability in evolution of deformity and radiological "Spine at Risk" signs were identified so that children at risk for progressive deformity can be identified early and selectively offered surgical cure. This study was awarded a PhD by the Tamil Nadu Dr MGR Medical University, Chennai, and was conducted under the guidance of Dr R Prabhakar, former Director, Tuberculosis Centre, Chennai, under the expert supervision of Prof. T K Shanmugasundaram, Emeritus Professor, Madras Medical College, Chennai. This work received the following awards:

Prof.T K Shanmugasundaram & Dr R Prabhakar

The sequelae of childhood spinal tuberculosis leading to gross 'hunch-back deformity. The child developed both cardio-respiratory compromise and neurological symptoms.

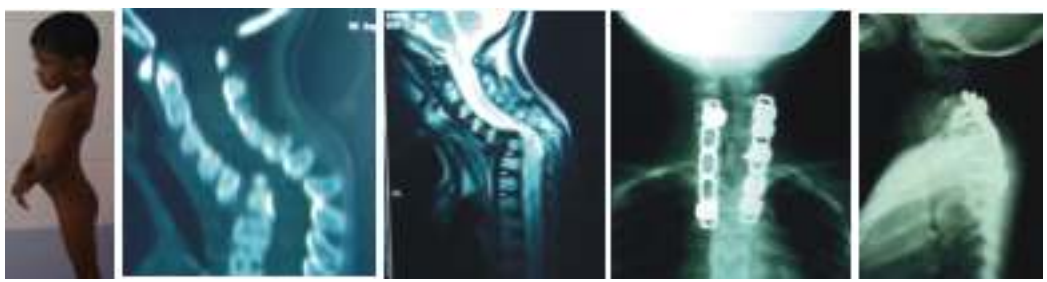
Awards - International

ISSLS- Sofamer Danek Award for "Best Clinical Research Paper" International Society for the Study of Lumbar Spine, Annual Meeting at Cleveland, USA, May 2002
Topic: "*Biomechanical Analysis of Buckling Collapse in Childhood Spinal Tuberculosis*"
Dr S Rajasekaran

ISSLS- Sofamer Danek Award for 'Best Clinical Research Paper' at the annual meeting of The International Society for the Study of Lumbar Spine, Singapore, 1996
Topic " *Tuberculous Lesions of the Lumbosacral Region - A 15 Year Follow - up of Patients Treated by Ambulant Chemotherapy"*
Dr S Rajasekaran

.International Fellow Presentation of The International Society for Study of Lumbar Spine, Marseilles, France, May 1993
Topic "*The Problem of Deformity In Spinal Tuberculosis* "
Dr S Rajasekaran

Norman Roberts Medal for the best M.Ch.(Ortho) thesis, University of Liverpool, UK, 1990,
Topic "*A Study on the Problem of Deformity in Spinal Tuberculosis"*
Dr S Rajasekaran



A child with healed spinal tuberculosis at the cervico thoracic junction demonstrating the 'spine at risk' signs treated with osteotomy, global fusion & instrumentation

Awards - National

1.Dr. B. C. Roy Memorial Award for the year 2002, by the Medical Council of India in recognition for outstanding work
Topic *'Spinal Tuberculosis'*
Dr S Rajasekaran

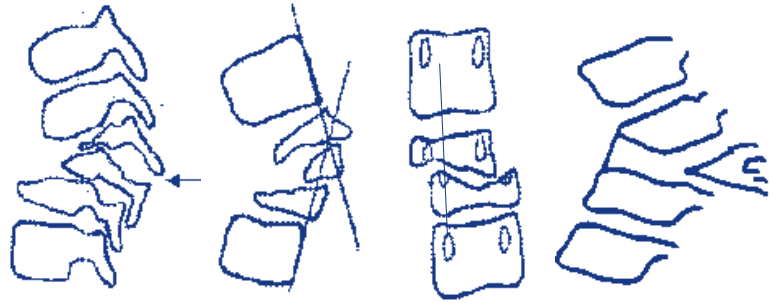
2.Tamil Nadu Government Scientist Award for the year 2000, presented by the Honorable Education Minister of Tamil Nadu, Mr.Tambi Durai, for outstanding research work on spinal tuberculosis
Topic " *A Longitudinal Study on the Pattern of Deformity in Spinal Tuberculosis"*
Dr S Rajasekaran

3. Annual Award for the Best Treatise in Orthopaedics, Bombay Orthopaedic Society, 1988
Topic "*Role and Fate of Bone Grafts in Modified Hong Kong Surgery*"
Dr S Rajasekaran

4. Prof. Vyageswaradu Gold Medal for the best paper, Tamil Nadu State Orthopaedic Annual Conference, Madurai. 1986
Topic "*Role and Fate of Bone Grafts in Modified Hong Kong Surgery*"
Dr S Rajasekaran

Publications - International

1. The Problem of Deformity in Spinal Tuberculosis
Clinical Orthopaedics and Related Research, 2002, 398, pp.85-92
Dr S Rajasekaran
2. Chapter on Spinal Tuberculosis
Oxford Textbook of Orthopaedics & Trauma - Oxford University Press, UK, 2002, vol 2, pp 1545 1561
Dr S Rajasekaran and Prof T K Shanmugasundaram
3. The Natural History of Childhood Spinal Tuberculosis
Journal of Bone Joint Surg [Br] 2001; 83-B: 954-62
Dr S Rajasekaran
4. Chapter on Tuberculosis of Spine
The Lumbar Spine, 3rd edition, edited by Herkowitz HN, Dvorak J, Bell G, Nordin M and Grob D, to be published in 2003
Dr S Rajasekaran
5. Chapter on Childhood Spinal Tuberculosis
Inflammatory Disorders of Spine, edited by Govender Natal University Press South Africa, to be published in 2003
Dr S Rajasekaran
6. Prediction of the Angle of Gibbus Deformity in Tuberculosis of the Spine
J Bone and Joint Surg 1987, 69A, 503-508
Dr.S.Rajasekaran and Dr.T.K.Shanmugasundaram
7. The Progression of Kyphosis in Tuberculosis of the Spine Treated by Anterior Arthrodesis
J Bone and Joint Surg, Oct 1989, 71A, 1314-1323
Dr.S.Rajasekaran and Dr.S.Soundarapandian
8. The Problem of Deformity in Spinal Tuberculosis
ISSLS Abstracts, 1993, Marseilles, France
Dr S Rajasekaran
9. Tuberculous Lesions of the Lumbosacral Region - A 15 Years Follow up of Patients Treated by Ambulant Chemotherapy
ISSLS Abstracts, 1997, Singapore
Dr S Rajasekaran
10. Tuberculosis Lesions of the Lumbosacral Region -A 15 Year Follow up of Patients Treated by Ambulant Chemotherapy
Spine 1998, 23(10), 1163-1167
Dr.S.Rajasekaran and Dr T K Shanmugasundaram



'Spine at Risk' signs

Journal of Bone Joint Surg (Br) 2001 : 83 - B : 954 - 62

Figure A - separation of the facet joint
Figure B - Posterior retropulsion
Figure C - Lateral translation
Figure D - Toppling sign

A young man with thoracic kyphotic deformity corrected by single stage corrective osteotomy and pedicular instrumentation

Salient Presentations on Spinal Tuberculosis

International

1. International Society for Study of Lumbar Spine, Singapore, June 1997
Topic "*Tuberculous Lesions of the Lumbosacral Region- Long-Term Follow-up of 15 Years*"
2.American Academy of Orthopaedic Surgeons, Illinois, USA, March 1998
Topic "*Tuberculous Lesions of the Lumbosacral Region- Long Term Follow-up of 15 Years*"
3. World Spine, Berlin, Germany, August / September 2000
Topic *"The Natural History of Childhood Spinal Tuberculosis- A 15 Year Prospective Study"*
4. International Society for the Study of Lumbar Spine, Adelaide, Australia, April, 2000
Topic *"Growth Related Changes in Kyphotic Deformity in Healed Childhood Spinal Tuberculosis"*
5. World Spine, Berlin, Germany, August / September 2000
Topic *"Spine at Risk Radiological Signs to Predict Late Collapse in Childhood Spinal Tuberculosis"*
6. Asia Pacific Orthopaedic Association 13th Triennial Congress, Adelaide, Australia, April, 2001
Topic *"Spine at Risk Radiological Signs to Predict Late Collapse in Childhood Spinal Tuberculosis"*
7. Operative Spine Course Asia Pacific Orthopaedic Association, Kuala Lumpur Malaysia, September 2001 Faculty member
Topic "*Natural History of Post Tubercular Kyphosis in Children and the Patterns of Progress during the Period of Growth*"
8. Guest Lecture at Bangladesh Orthopaedic Society, Annual Meeting, Dhaka, February, 2001
Topic *"Childhood Spinal Tuberculosis"*
9. Annual meeting of The International Society for the Lumbar Study, Cleveland, USA, May, 2002
Topic *"Biomechanical Analysis of Buckling Collapse in Childhood Spinal Tuberculosis"*
10.25th Combined Meeting of the Singapore Orthopaedic Association Meeting, Singapore, October, 2002
Topic *"The Natural History of Childhood Spinal Tuberculosis"*
11. 25th Combined Meeting of the Singapore Orthopaedic Association Meeting, Singapore, October, 2002
Topic *"Buckling Collapse of the Spine In Childhood Spinal Tuberculosis and its Implications in Late Onset Paraplegia"*

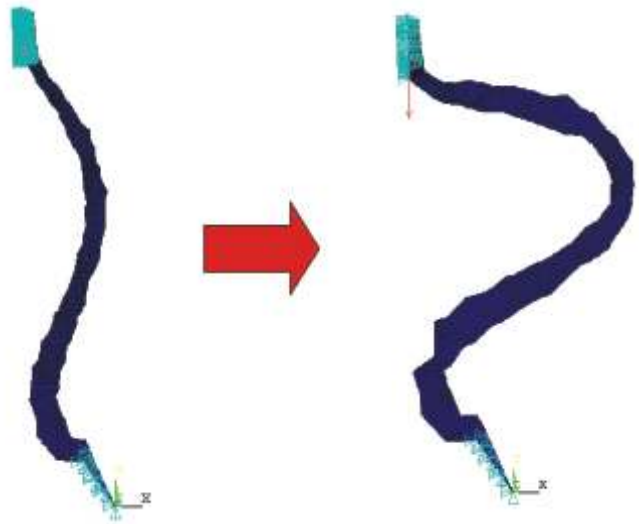
National

1. International Bone and Joint Tuberculosis Club Conference, Chennai1983
Topic *"Progress of Gibbus Deformity in Tuberculosis of the Spine"*
2. Tamil Nadu Orthopaedic Association State Conference, Ooty 1984
Topic *"Prediction of Gibbus Angle in Tuberculosis of the Spine"*
3. Tamil Nadu Orthopaedic State Conference,1986
Topic *" Role and Fate of Bone Grafts in Modified Hong Kong Surgery "*
4.International Bone and Joint Tuberculosis Club Conference, Agra, 1985
Topic "*The Role and Fate of Bone Grafts in Anterior Spinal Fusion in Tuberculosis of the Spine*"
5. Golden Jubilee Conference of Bombay Orthopaedic Society, December 1989
Topic *"Progression of Kyphosis in Tuberculosis of the Spine Treated by Modified Hong Kong Surgery"*
6. Indian Orthopaedic Annual Conference, Chennai 1992
Topic *"Problem of Deformity in Spinal Tuberculosis"*
7. Moderator, Orthopaedic Course, Mangalore; April 1997
Topic *"Spinal Tuberculosis"*
8. Karnataka Orthopaedic Association, Guest Lecture, Bangalore February 1998
Topic *"The Problem of Deformity in Spinal Tuberculosis in Children"*
9. Indian Orthopaedic Association - 44th Annual Conference Hyderabad, session co-chairman, December 1999
Topic *"Tuberculosis of Spine"*
10. Paediatric Orthopaedic Society of India, Annual Meeting, Guest Lecture, Mumbai, March 2000
Topic *"Skeletal Tuberculosis in Children"*
11. Paediatric Orthopaedic Society of India, Annual Meeting, Guest Lecture, Mumbai, March 2000
Topic *"TB Spine in Children - Changing Concepts in Management"*
12. Paediatric Orthopaedic Society of India, Guest Lecture, Mumbai, March 2000
Topic *"Indications and instrumentation for Spinal Tuberculosis in Children"*
13. Instructional Course Lecture American Academy of Orthopaedic Surgery and Indian Orthopaedic Association, Jaipur, October 2000
Topic *"Current Concepts in the Management of Spinal Tuberculosis"*
14. Annual Conference of Association of Spine Surgeons of India, New Delhi January 2001 - Symposium
Topic *"Rationale for Surgical Treatment on Spinal Tuberculosis"*
15. Paediatric Orthopaedic Society of India, Madurai, March, 2001 Plenary Session
Topic *" Spinal Tuberculosis in Children"*
16. Spine Speciality Convention at IOACON 2001, Ahmedabad
Topic *"Instrumentation in Tuberculosis of Spine"*

Research Contribution - Spine

FEM Analysis of Paediatric Spine

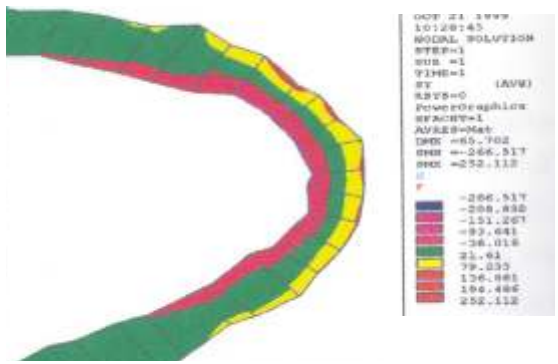
The FEM study was done with the help of the Department of Mechanical and Production Engineering, PSG College of Technology. A computer model of the spine was designed using the software ANSYS. Using the radiographs of patients with spinal tuberculosis similar defects were created in the model to stimulate the conditions of spine with an anterior defect. By applying incremental loads, the various forces that are generated in the spinal column were analyzed. This study gave insights to the bio-mechanical basis of the phenomenon of "buckling collapse of the spine" which is unique to spinal tuberculosis.



'FEM' computerised model of the paediatric spine, to study the mechanical forces across the peadiatric spine and the pattern of collapse. The model was designed in association with Prof. Mohan Ram, Mrs. P.R.Thyla & Mr. V.Prabhu Raja, Department of Mechanical and Production Engineering, PSG College of Technology

Awards - International

ISSLS- Sofamer Danek Award for 'Best Clinical Research Paper' at the annual meeting of The International Society for the Study of Lumbar Spine, at Cleveland, USA, May , 2002
Topic " *Biomechanical Analysis of Buckling Collapse in Childhood Spinal Tuberculosis"*
Dr S Rajasekaran



The FEM study shows that during collapse, the tensile forces occurring at the posterior column exceed the threshold levels to cause facetal dislocations. This event signifies is a "a point of no return" and leads to buckling collapse

Awards - National

1.Prof. A. Subramanian Gold Medal for Best Basic Science Research Award Tamil Nadu Orthopaedic Association- Annual Conference, Chennai, Feb 2001
Topic *"Biomechanical Analysis of Buckling Collapse in Childhood Spinal Tuberculosis"*
Dr S Rajasekaran

Publications - International

Biomechanical Analysis of Buckling Collapse in Childhood Spinal Tuberculosis
ISSLS Abstracts, Cleveland USA, 2002
Dr S Rajasekaran

Spinal Deformities

Scoliosis

Spinal deformity is perhaps the most devastating physical deformity. The plight of the 'crooked spines' and the 'hunch backs' are well described in our mythology from olden times. Spinal deformities not only causes cosmetic deformity resulting in poor self-esteem, but can also result in cardio respiratory problems and paralysis of limbs in very severe cases. The fear of surgical complications and ignorance that a safe surgical solution is possible makes many patients ignore the deformity till it attains devastating proportions. Advances in spinal surgery have made surgical correction of this complex problem very safe.

Surgery for both scoliosis (side bending deformities) and kyphosis (hunch back deformities) are routinely performed with a great degree of success. Surgical correction for scoliosis is performed by modern techniques which avoid distraction thereby increasing the safety of the procedure. Pedicle Screws fixations are used for the entire length of the spine thereby allowing greater correction and reducing chances of implant loosening or pseudoarthrosis.

Before Surgery | After Surgery

Scoliosis correction done by posterior pedicular instrumentation and fusion

Before Surgery | After Surgery

Scoliosis correction done by anterior instrumentation and fusion

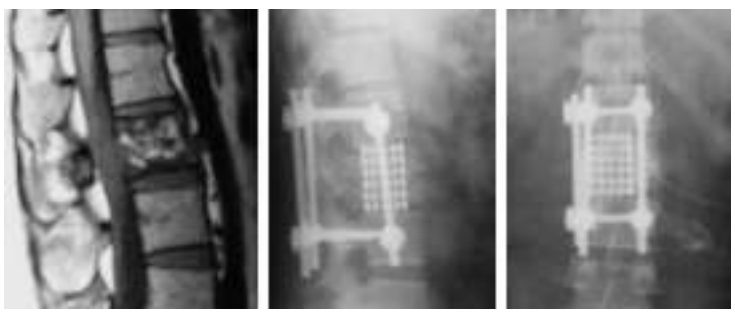
A 3 year old girl showing a Khyphotic deformity and the presence of ' Spine at risk' signs indicating the evolution of instability. The girl was managed by a posterior column resection, shortening, global fusion and posterior pedicular instrumentation.

Kyphosis

The commonest cause of hunch back deformity in India is spinal tuberculosis. Extensive destruction of the vertebral bodies and instability result in progressive deformity. Surgical stabilization and fusion done at the right time will help to prevent spinal collapse. Even in patients who have established hunch back deformity excellent correction is obtained by single stage osteotomy and spinal shortening and fixation procedures. The unit is at present concentrating on the technique of single stage spinal shortening to correct massive kyphotic deformities

Primary Vertebral Tumors

Primary benign and malignant tumors of the spine offer major challenges in treatment because of the difficulties in surgical approach, difficulties in technique of radical excision and their resistance to radiation and chemotherapy. The unit has vast experience in total excision of primary vertebral tumors and reconstruction. The availability of preoperative embolisation which reduces intra operative bleeding and modern spinal implants including titanium cages allows complete excision of tumour and functional reconstruction.



Hemangioma of the lumbar vertebra in a young man treated by global resection, fusion and instrumentation

Aneurysmal bone cyst of the cervical spine with global involvement treated by global resection & instrumentation

Awards

Prof. Vyageswarudu Gold Medal for the best paper, Tamil Nadu State Orthopaedic Annual Conference, Chennai, 1998
Topic " *Surgical Strategy for Primary Vertebral Tumours*"
Dr Senthilvel and Dr S Rajasekaran

Publications

Tumours of the Spine in Geriatric Population
XX Continuing Orthopaedic Education Course at Goa, September, 2002
Dr S Rajasekaran

Presentations -International

Asia Pacific Orthopaedic Association 13th Triennial Congress, Adelaide, Australia, April 2001
Topic *: "Primary Vertebral Tumours Surgical Strategy"*
Bangladesh Orthopaedic Society, Annual Meeting, Dhaka, Feb 2000
Topic *" Management of Primary Vertebral Tumours"*
25th Combined Meeting of the Singapore Orthopaedic Association Meeting, Singapore, October 2002
Topic *"Surgical Strategy in Primary Vertebral Tumours"*

Presentations - National

Tamil Nadu Orthopaedic Association, Annual Meeting, Thanjavur, February 1997
Topic *"Giant Cell Tumours of Spine"*
Second International Symposium on Oncology, Chennai, October,1997
Topic *"Giant Cell Tumours of the Spine"*
Tamil Nadu Orthopaedic Association, Thanjavur 1997
Topic *"Primary Vertebral Tumors"*
Indian Orthopaedic Association Conference, Jabalpur, December 1998
Topic *"Surgical Strategy for Complete Excision of Vertebral Tumours"*
XX Continuing Orthopaedic Education Course, Goa, September 2002
Topic *"Tumours of the Spine in Geriatric Population"*
Indian Orthopaedic Association, Annual Meeting, Patna, ASSI Sub-speciality Meeting, Nov, 2002
Topic *"Management of Cervical Vertebral Tumors"*

Microdiscectomy for Lumbar and Cervical Disc Disease

Disc disease is the most common surgical procedure done and microdiscectomy has been routinely performed since 1993. While the use of microscope improves the safety and achieves better results for cervical discs, it has the advantage of a small incision, less blood loss, less pain, early mobilization and early return to work in the lumbar disc surgery. In 2002, a total of 142 lumbar discectomies and 29 cervical disc surgeries were performed. The unit has conducted workshops on this important surgical procedure and presented many papers.

Microdiscectomy in progress

Presentations

International Course on Spine Surgery, *Coimbatore, 1994*
Topic *" Video Demonstration Technique of Microdiscectomy"*

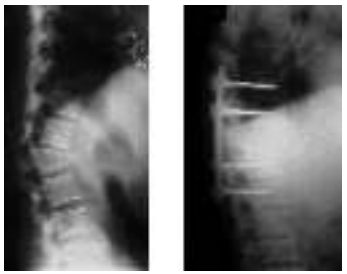
Instructional Course on Spine Surgery, *1994*
Topic *" Technique of Microdiscectomy"*

Tamil Nadu Orthopaedic Association, *Coimbatore, February 2002*
Topic *"Video Demonstration of Microsurgical Discectomy"*

Kerela Orthopaedic Association, *Cochin 2002*
Topic *"Degenerative Disc Diseases of the Spine"*

Instructional Course on Spine , *Ganga Hospital, Coimbatore, April 2002*
Topic *" Management Options for Degenerative Disc Disease"*

Instructional Course on Spine, *Ganga Hospital, Coimbatore, April 2002*
Topic *" Live Surgical Demonstration of Lumar Options for Degenerative Disc Disease"*



Before Surgery | After Surgery

A fracture dislocation of T12 over L1 stabilised by posterior pedical instrumentation

Spinal Trauma

The incidence of spine trauma in this part of the country is high due to a large number of people involved in agricultural work of manual harvesting of coconut and arecanut trees. Patients are appropriately treated either conservatively or surgically depending on the clinical presentation and neurological status. About 30 surgeries are performed annually to stabilise the traumatised spines. In patients without canal compromise and not requiring decompression, the technique of biological per cutaneous pedicle screw insertion and closed threading of rods is done. Patients with neck injuries with spine fractures are treated by anterior or posterior or combined stabilisation as per the indication.

Before Surgery | After Surgery

A life threatening cervical (C4 over C5) fracture dislocation injury has been treated by emergency decompression, fixation and fusion, thereby relieving the pressure on the spinal cord.

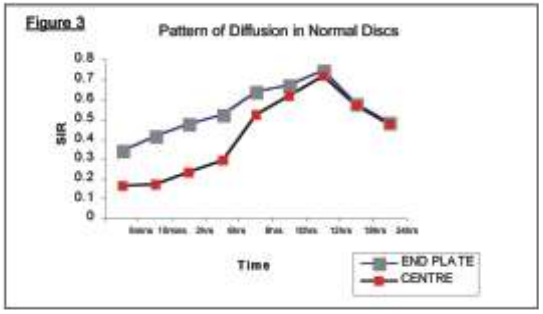
Research Contribution - Spine

Solute Transport across Lumbar Discs

The disc being the largest avascular structure in the body depends entirely on diffusion for its nutrition and function. Methods to evaluate and quantify the changes in diffusion can throw light on the functional status of the disc and also provide a reliable method to evaluate the influence of various factors on the degeneration of disc such as heavy mechanical loading, exercise, smoking and various pharmacological agents. Although few preliminary studies are available, these have been conducted on animals or have the disadvantage of not being longitudinal studies. Dr Rajasekaran and Dr Murugan (Director, Clarity MRI Centre, Coimbatore) have been involved in finding the normal diffusion pattern in human lumbar discs and also its variation with various pathologies, including disc degeneration and instability. This work has been performed on 32 human volunteers and patients and is the largest series in world literature.

Publication

A Study of Diffusion Pattern in Human Lumbar Intervertebral Discs - an MRI evaluation in normal volunteers and low back pain patients
Tamil Nadu Orthopaedic Association Journal, 2003
Dr S Rajasekaran, Dr R Arun and Dr Murugan



Pattern of diffusion in normal discs

Figure shows the 24-hour pattern of diffusion across the human normal lumbar intervertebral discs which was established for the first time in literature

Cursors of 1mm square were placed in seven different locations as shown above to calculate the enhancement values and increase in SIR. The average of seven values was used to compare the changes connected with aging and degeneration. The values at the end plate and at the centre were compared to find the quantum and the rate of diffusion from periphery to centre.

Awards

1. Prof. A. Subramanian Gold Medal for Best Basic Science Research Award Tamil Nadu Orthopaedic Association- Annual Conference, Kodaikanal, Feb 2003
Topic "*A Study of Diffusion Pattern in Human Lumbar Intervertebral Discs. - an MRI evaluation in normal volunteers and low back pain patients*"
Dr S Rajasekaran, Dr R Arun and Dr Murugan
2. Best Poster Presentation at the ASSICON 2003 (Association of Spine Surgeons of India, XVI Annual Conference), Varanasi
Topic "*A Study of Diffusion Pattern in Human Lumbar Intervertebral Discs - an MRI evaluation in normal volunteers and low back pain patients"*
Dr S Rajasekaran, Dr R Arun and Dr Murugan

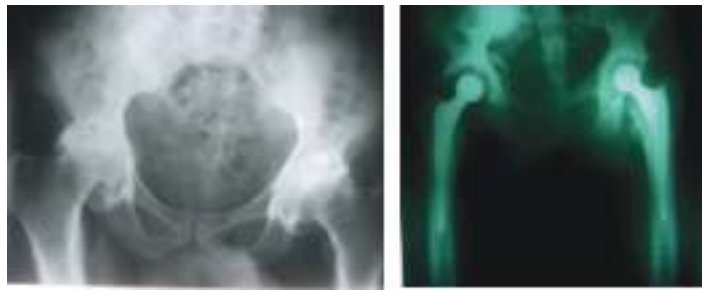
Presentation

Tamil Nadu Orthopaedic Association, Annual Conference, 2003
"A Study of Diffusion Pattern in Human Lumbar Intervertebral Discs. - an MRI evaluation in normal volunteers and low back pain patients"

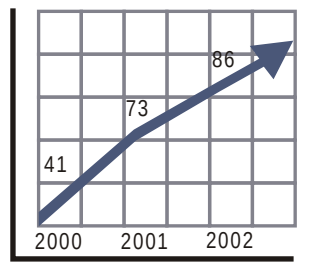
Total Joint Replacement

The dictum of modern orthopaedic surgery is 'Mobility is life; life is mobility'. The pain of arthritic joints can restrict movements and make a person dependent on others even for bare basic needs. Life becomes drudgery. While most of the arthritis is caused by wear and tear or old age, severe arthritis can also result from diseases like rheumatoid arthritis, post traumatic arthritis and other metabolic disorders. Total joint replacement is a boon for these patients as it gives them a new lease of life.

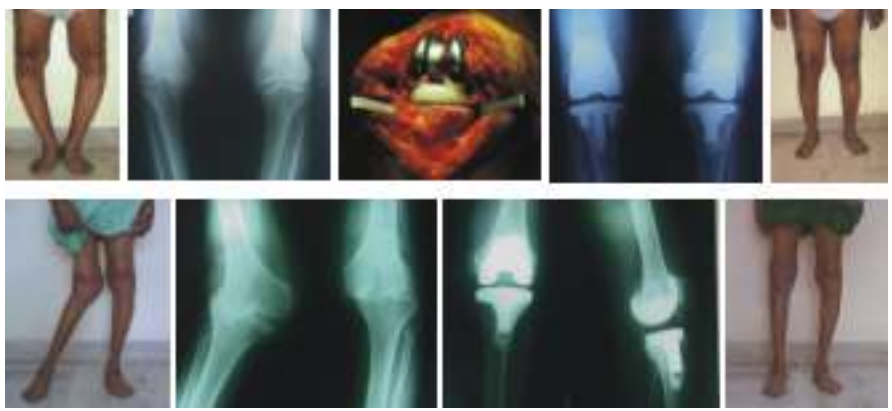
Total Joint Replacement has been routinely performed since 1992. It witnessed a boost in 1998 with growing public awareness about the high success rate of this procedure. Dr. S. Rajasekaran and Dr. J. Dheenadhayalan have been trained in this procedure at leading international units and the department now performs both routine joint replacements as well as joint replacements for advanced conditions with gross deformities and revision surgery. The number of joint replacements performed in the year 2000 was 41, increasing to 86 in the year 2002. This included replacement of the knee, hip, shoulder and elbow. For patients with multiple joint problems, bilateral simultaneous replacements are routinely performed; this procedure has the advantage of reducing the pain and the cost of treatment for the patient, as well as improving postoperative comfort and rehabilitation.



Severe arthritis of both hips which was treated by bilateral Total Hip Replacement



Total Joint Replacements



Severe arthritis results in gross deformities of varus or valgus of the knee. The ensuing instability makes it impossible for the patient to even stand without support. Total Knee Replacement restores the normal alignment and painless range of motion to the patient.

In India, primary knee arthritis is more common as compared to the west. The badly damaged joints become deformed and unstable making weight bearing, walking & working impossible. Total Knee Replacement helps to put patients on their feet and restore normal mobility, giving them a second lease of life. A milestone was the Three Day Instructional Course in Knee Surgery conducted from 24th - 26th July 2001, supported in part by a sponsorship from M/s. Sulzer Orthopaedic (India) Ltd.'s education grant. Internationally renowned pioneers in the field of arthrosplasty participated in the conference. In addition, Ganga Hospital's 'Joint Replacement Training Centre' was inaugurated on this occasion by Prof. Kent Samuelson, USA, one of the original designers of the Knee Joint Prosthesis.

Total Joint Replacement

Large tumours of bone & joints were usually treated by amputation or by resection & arthrodesis, which compromised function. Advances in joint replacement techniques have made it possible to radically excise these tumours and preserve joint function and mobility by using custom made endoprosthesis.

Presentations

Knee Course 2001, Coimbatore
Topic *"Bilateral Total Knee Replacement"*
Dr J Dheenadhayalan

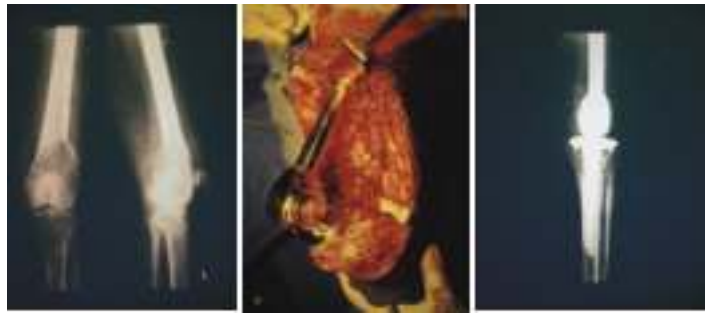
Update on Hip and Knee Arthroplasty 2002, Guest Lecture, Madurai, November 2002
Topic "*Varus Knee and Total Knee Replacement*"
Dr S Rajasekaran

Update on Hip and Knee Arthroplasty 2002, Guest Lecture, Madurai, November 2002
Topic "*Adjustments after Trial Prosthesis in Total Knee Replacement*"
Dr S Rajasekaran

Update on Hip and Knee Arthroplasty 2002, Madurai, November 2002.
Topic "*Should PCL be Preserved?*"
Dr S Rajasekaran

Continuing Medical Education Programme, Mysore Government Medical College, Mysore 2002
Topic "*Total Knee Replacement- the Technique*"
Dr S Rajasekaran

Endoprosthetic Joint Replacement for Tumours



Before Surgery

Endoprosthetic Joint Replacement done for tumours around knee & hip

Revision Joint Replacement

With the increasing number of Joint Replacement surgeries performed in this country, the need for revision replacements is also increasing. Revision surgeries require greater skill, special instrumentation and technique for cement removal, appropriate armamentarium and a wide range of prosthesis and good post-operative rehabilitation. The unit is regularly performing revision hip and knee surgeries since the year 2000.

A loose and unstable total knee has been revised with a long stem prosthesis

Paediatric Orthopaedics

The unit performed 247 surgeries in 2000 and 252 surgeries in 2001 for children with orthopaedic problems. Most of these problems involved birth deformities or deformities due to nutritional deficiencies, neurological problems like cerebral palsy or post polio paralysis. Unfortunately many of these children belong to the lower socioeconomic group and their treatment is neglected for want of financial resources. Recognizing this problem, Ganga Hospital performs most such surgeries at subsidized costs, under a 'No profit' basis. The hospital's 'Project Helpline' in conjunction with Coimbatore City Round Table 31 has gone a long way to financially support the children whose families cannot afford even the basic cost of the surgeries.

Club Foot Correction Surgery

Bilateral club foot in a 4 month old child corrected surgically with good results

Polio Correction Surgery

Before Surgery

After Surgery

A patient who was walking on all four limbs was operated on the hip and spine and made ambulant

Presentations

Paediatric Orthopaedic Society of India, Pune, 1998
Topic " *Treatment of Facture Shaft of Femur in Pediatric Age Group by External Fixation"*
Dr Shasidhar Reddy, Dr S Rajasekaran and Dr J Dheenadhayalan

Paediatric Orthopaedic Society of India, Pune, 1998
Topic " *Supracondylar Osteotomy In flexion Contracture of Knee in Poliomyelitis*"
Dr J Dheenadhayalan and Dr S Rajasekaran

TNOA, Coimbatore. 2002
Topic "*Free Fibular Transfer vs Ilizarov for Pseudarthrosis Tibia"*
Dr Krishnakumar, Dr S Rajasabapathy and Dr S Rajasekaran

World Orthopaedic Concern International San Diego, USA 2002
Topic "*Free Fibular Transfer in Pseudoarthosis Tibia"*
Dr J Dheenadhayalan, Dr S Rajasabapathy & Dr S Rajasekaran

Surgeries	1998	1999	2000	2001	2002
CTEV	37	31	41	62	58
Limb Deformity	54	62	68	41	44
Cerebral Palsy	37	33	48	51	56
Infection	42	39	42	47	58
Polio	28	33	48	51	53

Publication

Prospective Study of Outcome of Suturing vs. Non Suturing of Tendons in CTEV
Journal of the Tamil Nadu Orthopaedic Association - 2003
Dr.S.Rajasekaran, Dr.A.P.Shetty and Dr.Durga Nagaraju

Arthroscopy

Arthroscopy of the knee for diagnostic and therapeutic purposes is performed routinely. Excision or repair of the meniscus and arthroscopic ACL reconstruction are performed in association with Dr.D.V.Rajan, specialist in Arthroscopy and Sports Medicine. These procedures have helped to radically change the functional results in problems of the knee. 44 patients underwent these procedures in 2000, 27 patients in 2001 and 29 patients in 2002.

Keyhole Surgery

Contributions to Text Books and Important Publications

Chapter on "Spinal Tuberculosis"
Oxford Textbook of Orthopaedics & Trauma - Oxford University Press, UK, 2002, vol 2
Dr S Rajasekaran and Prof. T K Shanmugasundaram

Chapter on "Bone & Joint Infections"
Oxford Textbook of Orthopaedics & Trauma - Oxford University Press, UK, 2002, vol 2
Dr S Rajasekaran and Dr J Dheenadhayalan

Chapter on "Polio Myelitis"
Oxford Textbook of Orthopaedics & Trauma - Oxford University Press, UK, 2002, vol 2
Prof Benjamin Joseph and Dr S Rajasekaran

Chapter on "Miscellaneous Orthopaedic Infections"
Oxford Textbook of Orthopaedics & Trauma - Oxford University Press, UK, 2002, vol 2
Dr S Rajasekaran and Dr Ajoy P Shetty

Chapter on "Tuberculosis of Spine"
The Lumbar Spine, 3rd edition, edited by Herkowitz HN, Dvorak J, Bell G, Nordin M and Grob D, to be published in 2003
Dr S Rajasekaran

Chapter on "Childhood Spinal Tuberculosis"
Inflammatory Disorders of Spine", Natal University Press South Africa, to be published in 2003
Dr S Rajasekaran

"Morphological Changes seen in Childhood Spinal Tuberculosis - A 15 year Prospective Study of Children Treated by Ambulant Chemotherapy"
Journal of Bone & Joint Surgery (Am), accepted for publication in 2003
Dr S Rajasekaran et al

"Spontaneous Tendon Ruptures in Alkaptonuria"
Journal of Bone & Joint Surgery (Br), to be published in June 2003
Dr. Manoj Kumar and Dr S Rajasekaran

"Baastrup's disease" as a cause of neurogenic claudication. A case report.
Spine July 1st 2003
Dr. Yogesh K Pithwa & Dr S Rajasekaran

Other Salient Publications and Presentations

Presentations

Tamil Nadu Orthopaedic Association, Vellore, 1994
Topic: *Aggressive Management of Resistant Post Operative Orthopaedic Infections*
Dr J Dheenadhayalan

Tamil Nadu Orthopaedic Association, Chennai, 1996
Topic: *Shoulder Stabilization with Inferior Capsular Shift for Recurrent Dislocation*
Dr J Dheenadhayalan

Tamil Nadu Orthopaedic Association, Chennai, 1996
Topic: *"Hybrid Fixation of Tibial Plateau Factures"*
Dr S Rajasekaran

SICOT, Syndey, Australia, April, 1999
Topic *: "Hybrid Fixation of Complex Tibial Plateau Fractures"*
Dr S Rajasekaran

Emerging trends in Shoulder Surgery Sooriya Hospital, Chennai, 2000
Topic: *Shoulder Instability- Role of Open Surgery*
Dr J. Dheenadhayalan

IMA Chapter, Anamalai 2000
Topic: *Trends in Management of Fractures*
Dr J Dheenadhayalan

Orthopaedic Research & Education Foundation, Patna, September 2001
Topic: *"Proximal Tibial Fractures"*
Dr S Rajasekaran

Orthopaedic Research & Education Foundation, Patna, September 2001
Topic: *"Percutaneous Reduction and Hybrid Fixation of Complete Tibial Plateau Fracture - A 4 Year Follow Up in 120 Patients"*
Dr S Rajasekaran

Orthopaedic Research & Education Foundation, Patna, September 2001
Topic *: "Analysis of Poor Outcome Following Internal Fixation"*
Dr S Rajasekaran

Orthopaedic Research & Education Foundation, Patna, September 2001
Topic *: "Initial Management of Patients with Multiple Fractures"*
Dr S Rajasekaran

Continuing Medical Education Programme of Madurai Medical College, Madurai, 2001
Topic: "*Controversies in Intramedullary Nailing*"
Dr J Dheenadhayalan

Tamil Nadu Orthopaedic Association, Coimbatore, 2002
Topic: "*Open Subacromial Decompression and Rotator Cuff Repair*"
Dr J Dheenadhayalan

Poster presentation at SICOT Meeting, San Diego, USA, 2002
Topic: "*Open Subacromial Decompression and Rotator Cuff Repair*"
Dr J Dheenadhayalan

Continuing Medical Education Programme, Mysore 2002
Topic *: "Distal Femur Fractures"*
Dr J Dheenadhayalan

Continuing Medical Education Programme, Mysore 2002
Topic : "*Proximal Tibial Fractures*"
Dr J Dheenadhayalan

Asia Pacific Orthopaedic Association Sports Medicine, Singapore Oct, 2002
Topic : "Open rotator cuff repair"
Dr I Ramakanth Rao, Dr J Dheenadhayalan

Publications

"Postoperative Implant Failures And Nonunions - Where Lies The Fault?"
Recent Trends in Fracture Management, 2001. Edited by Dr. D.K. Taneja
Dr Farook, Dr.I.Ramakanth Rao and Dr S Rajasekaran

"Orthopaedic Management In Polytrauma Situation"
Recent Trends in Fracture Management, 2001. Edited by Dr. D.K.Taneja
Dr.S.Rajasekaran and Dr.I.Ramakanth Rao

"Proximal Tibial Fractures"
Recent Trends in Fracture Management, 2001. Edited by Dr D.K. Taneja
Dr S Rajasekaran and Dr.I.Ramakanth Rao

"Initial Management Of Patients With Poly Trauma"
Recent Trends in Fracture Management, 2001. Edited by Dr. D.K. Taneja
Dr S Rajasekaran and Dr.I.Ramakanth Rao

Awards

Silver Jubilee Award for Original Research, 2002 from Medical Council of India carrying a special Medallion and cash award of Rs.1 lakh - awarded by the President of India.
Topic : "*Childhood Spinal Tuberculosis"* - Dr S Rajasekaran

SICOT Paper Award for presentation at the SICOT Meeting, San Diego, USA. Aug 2002
Topic: " *Immediate Total Reconstruction of Limbs in Open Injuries*" - Dr S Rajasekaran

ISSLS- Sofamer Danek Award for "Best Clinical Research Paper" International Society for the Study of Lumbar Spine, Annual meeting at Cleveland, USA. May 14-18, 2002
Topic: "*Biomechanical Analysis of Buckling Collapse in Childhood Spinal Tuberculosis*" - Dr S Rajasekaran

Vocational Excellence Award of Rotary Club of Coimbatore West, on 23rd October 2000.
Dr S Rajasekaran

Prof.A.Subramaniam Gold Medal for "Best Basic Science Research Award" Tamil Nadu Orthopaedic Association- Annual Conference, Chennai- Feb 2001
Topic: "*Biomechanical Analysis of Buckling Collapse in Childhood Spinal Tuberculosis by the Creation of a Finite Element Model (FEM) of a Paediatric Spine."* - Dr S Rajasekaran

Tamil Nadu Government Scientist Award" for the year 2000.Presented By Honorable Education Minister of Tamil Nadu,Mr.Tambi Durai for outstanding research work on " Spinal Tuberculosis".
Topic: " *A Longitudinal Study on the Pattern of Deformity in Spinal Tuberculosis*" - Dr S Rajasekaran

ORMED Indo-German Orthopaedic Foundation Award Best Orthopaedic Research presentation, Hyderabad, 1997
Topic: " *How far can we go on Day One Reconstruction in Open Injuries ?*" - Dr S Rajasekaran

ISSLS- Sofamer Danek Award' for "Best Clinical Research Paper" International Society for the Study of Lumbar Spine, Annual meeting, Singapore, 1996
Topic: "*Tuberculous Lesions of the Lumbosacral Region - A 15 Year Follow-up of Patients treated by Ambulant Chemotherapy*"
Dr S Rajasekaran

A K Talwalker Oration" Maharashtra Orthopaedic Association, Aurangabad,, 1999
Topic: "*Spinal Instability : Its Understanding and Clinical Applications* " - Dr S Rajasekaran

International Fellowship Award of International Society for Study of Lumbar Spine - Marseilles, France, May 1993
Topic "*The Problem of Deformity in Spinal Tuberculosis*" - Dr S Rajasekaran

A A Mehta Gold Medal for the Best Paper Presentation, Indian Orthopaedic Association Conference, Kochi, November 1997
Topic: "*Primary Internal Fixation in Open Injuries"* - Dr S Rajasekaran

Honourable Minister for Education, Government of Tamil Nadu, presenting the prestigious Tamil Nadu Scientist Award to Dr. S.Rajasekaran for his work on Spinal Tuberculosis.

Dr.S.Rajasekaran receiving the Vocational Excellence Award of Rotary International District 3200 from the President of the Rotary Club of Coimbatore West

Academic Activities

The academic work of the department is guided by Academic Director Prof. Dr. M.V. Daniel, former Head of the Department of Orthopaedic Surgery, Christian Medical College, Vellore, and is supervised by the Head of the Department, Dr. S. Rajasekaran. Prof. M.V. Daniel's clinical and academic experience in heading the illustrious orthopaedic unit of Christian Medical College, Vellore, for many decades and his passion for proper records and protocol have helped to transform this clinical unit into a good academic unit. The unit lays great emphasis on proper documentation and regular clinical audits. This meticulous record keeping has helped in prospective and retrospective clinical research.

Ganga Hospital conducts regular courses and is a popular centre of teaching with well sought after fellowships and courses in orthopaedic and para-orthopaedic fields.

Prof. Dr. M.V.Daniel
MS (Gen), MS (Ortho), FACS (Ortho)

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

|The unit is recognized for post graduate training in Orthopaedic Surgery by the National Board of Examinations (NBE) since 1997 and currently trains four candidates every year. Candidates are selected strictly on merit, by MCQ examination and interviews. Regular teaching programs include clinical demonstrations, Journal Club, Seminars, Symposiums and Sessions on Radiology and Orthropathology making this unit one of the best training centres in the country. Periodic guest lectures are also arranged, where eminent persons from India and abroad are invited to lecture on their fields of interest and also conduct clinical sessions.

The following candidates have completed or are undergoing the course:

1. Dr. Dinesh Kumar Shetty : 1997 Thesis : Patterns of muscle paralysis in poliomyelitis
2. Dr. Sasidhar Reddy : 1998 Thesis : Longitudinal analysis of deformity in childhood spinal tuberculosis
3. Dr. Badrinath . T.P : 1999 Thesis : Determinants in functional outcome of open injuries of limbs
4. Dr. M M Farooq : 2000 Thesis : Post-operative implant failures and non-unions - Where lies the fault?
5. Dr R Krishna Kumar : 2000 Thesis : Primary closure in open injuries : A prospective study
6. Dr A B Rajendra Babu : 2000 Thesis : Primary bone grafting in open injuries of limbs with bone deficits -: A Prospective study in 60 patients
7. Dr R Arun : 2000 Thesis : Study of outcome of non-instrumented fusion in cervical discectomies
8. Durga Nagaraju : 2001 Thesis : Prospective study of outcome of suturing vs. non suturing of tendons in CTEV
9. Dr. G.Poornanand : 2001 Thesis : Late infection in compound injuries.
10. Dr. Naveen Kumar : 2001 Thesis : Analysis of intra-compartmental pressure changes in closed interlocking nailing of tibial fractures
11. Dr. Janarthana Aithala.P : 2001 Thesis : Management of proximal and distal fractures of the leg by interlocking nailing
12. Dr. Divakar Raju.K. : 2002 Thesis : Comparison of biological and DCS fixation with or without bone grafting in supra condylar femur fractures
13. Dr. Udai Kiran : 2002 Analysis of outcome in acetabular fractures
14. Dr. Sasikumar : 2002 Thesis : Limb reconstruction system in open injuries with bone loss
15. Dr. Dhanasekar Raja. D : 2002 Thesis: An analysis of outcome of Total Knee Replacements in grossly deformed knees
16. Dr. Mubarak Ali : 2003 Thesis : Outcome of internal decompression in lumbar canal stenosis
17. Dr. Chandrashekara.C.M. : 2003 Thesis : Hybrid fixation for tibial plateau fractures
18. Dr. Ramalingam.K : 2003 Thesis : The use of regular audit in reducing the rate of complications in a busy orthopaedic unit
19. Dr. B. Roy Wilson Armstrong : 2003 Thesis : A study of solute transport in human lumbar intervertebral discs

Courses

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

In 2000 the department became the first and only unit in the country to be recognized by the National Board of Examinations for super-speciality training in Spine Surgery. The fellows are selected by an All India Entrance Exam 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 tasks along with the responsibility for maintaining accurate and systematic documentation of clinical cases. In the second year, hands-on surgical training is offered under supervision and guidance.

Dr. I. Ramakanth Rao and Dr. Yogesh K Pithwa are the current Spine Fellows.

Ganga - Johnson & Johnson Spine Fellowship for Research in Spine Surgery

The unit's expertise and vast clinical experience enable it to offer numerous fellowships in spine surgery. The department of spine surgery offers the Ganga Johnson & Johnson Spine Research Fellowship to neuro and orthopaedic surgeons who wish to pursue research work in the field of spine surgery. This fellowship was started after the visit of Mr. William D.Dearstyne, and Mr.Supratim Bose, Vice Presidents of Johnson & Johnson to Ganga Hospital.

The Ganga and Johnson & Johnson Team during the visit of vice-Presidents Mr .William D. Dearstyne and Mr. Supratim Bose.

Trauma Fellowships

The unit's rich experience in trauma has led to research in various topics of orthopaedic trauma such as primary closure of injuries, primary bone grafting, concomitant bone transport after immediate flaps. The department offers the Ganga Trauma fellowship enable young surgeons to pursue research activities in trauma and also gain valuable experience in trauma management. The trauma fellow is primarily responsible for accurate documentation and record maintenance of the large number of trauma victims. The 1year trauma fellowship receives ample funding and has performed important research on various management options in the fields of open injuries of limbs and interlocking nails since 1995.

Dr. J.Naresh Babu and Dr.B.C.Bhanuprakash are the current trauma fellows.

Dr.P.V.Manoj Kumar
1st Trauma Fellow

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

The hospital is a Training Centre recognised for the WOC-SICOT and WOC-Sulzer Fellowship. The department is recognised for fellowship training programmes sponsored by the World Orthopaedic Concern in the fields of General Orthopaedic Surgery, Advanced Trauma Surgery and Spine Surgery. Selected candidates are awarded a travel grant and subsidised accommodation. The candidates are greatly benefitted as they are exposed to a wide variety of surgeries in their fields of interest. During the fellowship period of 6 weeks, the fellows take active part in the outpatient department, ward rounds, clinical teaching and surgical sessions.

DR. DE SHENG ZHAO
Consultant Orthopaedic Surgeon,
Tian Jin Hospital,
Tian Jin, China

Orthopaedic Technician Course

The Orthopaedic Technician Course trains two 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 technique of plaster application, immediate management of the injured patient in the casualty, the basics of preoperative assessment, operating theatre procedures, autoclaving and operating C-Arm for orthopaedic and spinal procedures. In the year 2001, WOC, UK sponsored Mr Sirak Gugsa from Addis Ababa, Ethiopia for training for 1 year.

Trauma Nursing Course

Ganga Hospital started an unique course in 'Trauma Nursing' in 2001 to train four candidates every year. The course has been started recognising the fact that nursing patients with major injuries requires special skills and techniques. The students are taught the theoretical aspects by both the surgeon and the anaesthesiologist and undergo practical training in casualty, ward, intensive care unit and operation theatre. The one-year course emphasises on resuscitation of polytrauma patients, immediate care of the injured and basics of surgical procedures. Great emphasis is also given to preoperative and postoperative management of injured patients. In 2002, the course was upgraded to a 3-year Diploma course in Trauma Nursing; the candidate has 100 hours of teaching in basic sciences at PSG Institute of Medical Sciences and Research, Coimbatore.

Physiotherapy Trainee

The department of physiotherapy offers training to candidates from R V S College of Physiotherapy & Cheran College of physiotherapy. The physiotherapy department of Ganga Hospital plays an essential and integral part in bettering the results of surgery and providing good functional outcome. The department is well-staffed with 6 full-time physiotherapists and 2 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.

Current Research Work

1. Prospective Study of Outcome of Suturing vs. Non-suturing of Tendons in CTEV
Dr. Durga Nagaraju, Dr. S.Rajasekaran and Dr. Ajoy Prasad Shetty

2.Late Infection in Open Injuries
Dr. G.Poornanand, Dr. S.Rajasekaran and Dr. Dheenadhayalan

3.Comparison of Biological and DCS Fixation with or without Bone Grafting in Supra Condylar Femur Fractures
Dr. Diwakar Raju.K, Dr. S.Rajasekaran and Dr. Dheenadhayalan

4.Analysis of Outcome in Acetabular Fractures
Dr. Uday Kiran, Dr. S.Rajasekaran and Dr. Ajoy Prasad Shetty

5.Limb Reconstruction System in Open Injuries with Bone Loss
Dr. Sasikumar, Dr. S.Rajasekaran and Dr. Dheenadhayalan

6 An Analysis of Outcome of Total Knee Replacements in Grossly Deformed Knees
Dr. Dhanasekar Raja, Dr. S.Rajasekaran and Dr. Dheenadayalan

7.Outcome of Internal Decompression in Lumbar Canal Stenosis
Dr. Mubarak Ali, Dr. S.Rajasekaran and Dr. Ajoy Prasad Shetty

8.Hybrid Fixation for Tibial Plateau Fractures
Dr. Chandrashekara.C.M., Dr. S.Rajasekaran and Dr. Dheenadhayalan

9.The Use of Regular Audit in Reducing the Rate of Complications in a Busy Orthopaedic Unit
Dr. Ramalingam.K, S.Rajasekaran and Dr. Ajoy Prasad Shetty

10. A Study of Solute Transport in Human Lumbar Intervertebral Discs
.Dr. B. Roy Wilson Armstrong, Dr. S.Rajasekaran and Dr. Murugan

11.A Simple Method of Extraction of Broken Femoral Prosthesis
Dr. B.C.Bhanu Prrakash, Dr. S.Rajasekaran and Dr. Dheenadhayalan

12.Biological Fixation of Thoracolumbar Fractures
Dr .I.Ramakanth Rao, Dr. S.Rajasekaran and Dr. Ajoy Prasad Shetty

13.A Clinical Radiological & Operative Correlation of Consecutive 100 Lumbar Intervertebral Disc Prolapses
Dr. Yogesh.K.Pithwa, Dr. S.Rajasekaran and Dr. Ajoy Prasad Shetty

14.Concomitant Bone Transport after Immediate Flap Cover in Open Injuries with Bone Deficit
Dr. J.Naresh babu, Dr. S.Rajasekaran and Dr. Dheenadhayalan

15.Role of Spinal Shortening in Correction of Kyphosis in Spinal Tuberculosis
Dr. S.Rajasekaran

Conferences Organised

ICSS -I
International Course
on Spine Surgery
11-13 Jan 1994
SITRA Auditorium,
Coimbatore

International Faculty
Mr.Gordon Findlay
Prof.J.Y.Lazennec
Dr.S.S.Upadhyay
Mr.Neil.W.Valentine

National Faculty
Prof.A.Gajaraj
Prof.P.K.Dave
Prof.V.T.Ingalhalikar
Prof.K.Sriram

Prof.T.K.Shanmugasundaram lighting the lamp to inaugurate ICSS - 1

ICSS -II
International Course on
Spine Surgery
19-21 Jan 1996
SITRA Auditorium,
Coimbatore

International Faculty
Dr J V Lazennec
Mr A J B Fogg
Mr Jeremy Fairbank
Dr John S Thalgott
Dr Subroto Sapardan
Dr Selan Sayampanathan
Prof T A Leclerq
Dr Louis Mortillaro

National Faculty
Prof T K Shanmugasundaram
Dr V T Ingalhalikar
Prof K Sriram
Prof P S Ramani
Prof S P Mohanty
Dr Ashok N Johari
Dr Shekhar Bhojraj
Dr Subba Rao
Dr R Prabhakar

Dr J V Lazennec, France explaining the intricacies of pedicle screw instrumentation to the delegates

ICSS -III
International Course
on Spine Surgery
14-16 Aug 1998
Hotel Residency,
Coimbatore

International Faculty
Dr.Anthony T Yeung
Dr.Henry Halms
Prof.Katsuro Tomita
Dr.Manohar M Panjabi
Dr.Noel I Perin
Dr.Orso Lorenza Osti
Dr.Sengupta D K
Prof.Setti S Rengachary
Dr.Sivanathan K S
Dr.Tushar Ch Patel
Dr.Wong Hee Kit

Indian Faculty
Dr.Ashok N Johari
Prof.Ingalhalikar V T
Prof.James Gnanadoss
Dr.Parthiban J K B C
Dr.S.Rajasekaran
Dr.Sridhar K

Prof. V T Ingalhalikar actively interacting with delegates

ICSS-IV

International Course
on Spine Surgery
4-6 Aug 2000
Hotel Residency,
Coimbatore

International Faculty

Prof. C.Y.CHUNG
Mr. G.FINDLAY
Dr. MANOJ KRISHNA
Prof. JOHN C.Y.LEONG
Dr. DILIP SENGUPTA
Dr. E.ASHKENAZI
Dr. VIOLA BULLMAN

Prof. C.Y.CHUNG
Korea, conducted a live surgical demonstration on grade IV spondylolysthesis

National Faculty

Dr. S.RAJASEKARAN
Prof. G.D.SUNDARARAJAN
Dr. SEKHAR BHOJRAJ
Dr. ARVIND JAISWAL
Dr. RAM CHADDA
Dr. ASHOK JOHARI
Dr. SAJAN HEGDE
Prof. A.GAJARAJ
Dr. SAMEER DALVIE
Dr. SANJAY AGARWALA

Indo - German Orthopaedic Foundation Annual Conference

22&23 Jan 2000

International Faculty

Prof. Dr. W.MUTSCHLER
Dr. H.G.HERMICHEN
PD. Dr. D.TRAEGER
Prof. Dr. B.CLAUDI
Prof. Dr. R.NEUGEBAUER
PD. Dr. T.SIEBEL
Prof. Dr. D.HOENTZSCH

Prof. Dr.W.MUTSCHLER
President - IGOF, delivering the Presidential Lecture

National Faculty

Dr. S.RAJASEKARAN
Dr. S.K.S.MARYA
Dr. J.DHEENADHAYALAN
Dr. C.MOHAN
Dr. SURYANARAYANA

Knee Course

Instructional
Course on
Total Knee
Replacement
24 - 26 July 2001

International Faculty

Dr.K.M.SAMUELSON
IProf. Dr. WUI K.CHUNG
Prof. DR. RAY RANDLE

National Faculty

Dr. S.RAJASEKARAN
Dr. J.DHEENADHAYALAN
Dr. G.S.KULKARNI
Dr. JASWANT RAI
Dr. S.VENKAT
Dr. D.V.RAJAN
Dr. S.K.S.MARYA
Dr. P.SURYANARAYAN
Dr. ARUN MULLAJI

Dr Kent Samuelson inaugurating the Ganga Joint Replacement Training Centre

ICS - 1
Instructional Course
on Spine
Low Back Pain
6 & 7 April 2002

Dr Tan Seang Beng of Singapore
General Hospital delivering a Guest Lecture

Faculty
Dr Tan Seang Beng
Prof. V. T. Ingalhalikar
Dr Murugan
Dr Ajoy Prasad Shetty
Dr S Rajasekaran

ICS - 2
Instructional Course
on Spinal Deformity
7 & 8 Dec 2002

Prof.Wong Hee kit of National University of
Singapore delivering the Guest Lecture

Faculty
Prof. Wong Hee Kit
Dr Ashok N Johari
Dr Shekar Y Bhojraj
Dr.S.Rajasekaran
Dr. Ajoy Prasad Shetty
Dr.Gautham Zaveri
Dr.Abhay Nene

Forth Coming Events for 2003

NATIONAL TRAUMA
MANAGEMENT COURSE
22 - 23 APRIL 2003

ASIA PACIFIC ORTHOPAEDIC
ASSOCIATION - FIRST
CONFERENCE ON TRAUMA
25 -27 APRIL 2003

GANGA HOSPITAL - ALUMNI
ASSOCIATION Inauguration 24
APRIL 2003

Combined
Instructional Course
on Spine Surgery
8 -10 August 2003, Organised by Association of Spine Surgeons of India & Spine Surgeons of Europe. Hosted by Ganga Hospital

Visitors

Prof. W.MUTSCHLER
Germany

Prof. JOHN C.Y. LEONG
Hong Kong

Prof. D.HOENTSCH
Germany

Prof. Wong Hee Kit
Singapore

Dr. WUI K. CHUNG
Australia

Mr.William S.Dearstyne
Johnson & Johnson, USA

Dr.TAN SEANG BENG
Singapore

Mr. G.FINDLAY
U K.

Dr. KENT SAMUELSON
USA

PD. Dr. D.TRAEGER
Germany

Dr. DILIP SENGUPTA
U.K.

Dr. RAY RANDLE
Australia

Dr. C.B. Maheshwar
USA

Prof. CHUNG
Korea

Dr. ANTHONY T YEUNG
USA

Dr.ORSO LORENZA OSTI
Australia

Prof.Dr.R.NEUGEBAUER
Germany

Dr. Eshwar
U.S.A.,

Prof. T.K.SHANMUGASUNDARAM
Chennai

Prof. A.GAJARAJ
Chennai

Prof. SUSHRUT BABHULKAR
Ex-President,
Indian Orthopaedic Association

Dr. RAJASEKARAN
Former President,
National Board of Examinations,
New Delhi

Prof. K.SRIRAM
Chennai

Prof.V T INGALHALIKAR
Thane

Dr.SHEKAR Y BHOJRAJ
Mumbai

Prof. G S Kulkarni
President,
Indian Orthopaedic Association

Dr. ARVIND JAISWAL
New Delhi

Dr.S S UPADHAYAY
Hong Kong

Dr. ASHOK JOHARI
Mumbai

Dr. G.ZAVERI
Mumbai

Dr.HENRY HALMS
Germany

Dr.THIERRY DAVID
France

Dr. MANOJ KRISHNA,
U.K.

Dr. SUTHERLAND
Australia

Mr. EAIN FINDLAY
U.K.

Mr. ANDREW FROST
U.K.

. . . They said

Dr. T SIEBEL, Germany
" visit was a great experience"

JOHN C Y LEONG, HongKong
" Great honour and pleasure to be invited & to see this clinical unit and research work

Dr.D HOENTZ
" as good as any set up in Europe"

WILLIAM DEARSTYNE ,Johnson & Johnson
" Our thanks & admiration to your commitment to microsurgical & orthopaedic excellence & your outreach to the community"

Dr PDG MARIUS, Dr ALMEDIA, SriLanka
"center beyond excellence in orthopaedics"

DR PRASASANNA SINHA KOA TRAVELING FELLOW
" This hospital is an enduring edifice of infrastructure based on the foundation of dedication discipline, organization, teaching,research,documentation & audit"

Prof. S.M.TULI, New Delhi
'A rare combination of young enthusiastic orthopaedic surgeons working to serve, analyse, improve, publish and serve better'.

Dr. DAVY OLAKKENGIL, Bangalore
' An island of excellence, I am sure this will be a role model for many more such centres throughout the country'

Dr. EDWARD T. MAH, Australia
'I am impressed by the high level of patient care offered by your hospital'

Prof. JASWANT RAI, Chandigarh
'The quality of work being done in this institute is highly impressive'

Dr. ARUN MULLAJI, Mumbai
'Excellent set up and superb work'

Dr. VINOD KUMAR, New Delhi
'I have really learnt the state-of-art care of orthopaedics, the real spirit of good and hard work for the ultimate benefit of the patient'

Ms. DIANE STERLING, Australia
'Very impressed with efficiency'

Dr. Md. MASHIUR RAHMAN, Bangladesh
'The ortho unit of Ganga Hospital is an impressive, dynamic and enthusiastic one!'

Dr. HORATIUS JEFFERS, West Indies
'The dedication, hard work and experience of your team shines. Your workload is phenomenal and results and commitment exemplary. I am learning and enjoying every moment of my time here.'

PROF CHUNG,KOREA
"It was a pleasure to operate in this impressive setup"

Dr TAN SEANG BENG,SINGAPORE
" I am most impressed by Ganga hospital. I am confident Ganga Hospital will be world renowned"

Dr. S.SANDEEP, Bangalore
'An opportunity to appreciate the finer aspects of spinal surgery and the spirit to do new things. The dedication of the people here is a case for admiration'

Dr. R.CHANDRASEKAR & K.S.SWAMY
Bangalore
'The work culture, diligence and perseverance for quality and consistency is quite remarkable and worth emulating. The willingness to teach and impart/ share knowledge is appreciable'

Dr. JOBY JOHN, Kerala
'I cherish my time here for stimulating my thinking faculties for 15 hours a day... everyday, for the attitude or the conviction beneath all that happen'

Dr. J.SRITHARAN, Sri Lanka
"center beyond excellence in orthopaedics"

Dr. K.B.MUKHERJEE, New Delhi
'Awe inspiring surgeries & facilities – an institute of national pride'

Dr. NISAR A DAR, Jammu & Kashmir
'I enjoyed an extravaganza of academic and research activities focused at improved patient care. It was a dedicated activity right from dawn to late nights, nobody showing any signs of fatigue'

Dr. TAPAN BANERJEE, Jaipur
'A wonderful experience of splendid work culture, enormous clinical & academic work - watched & enjoyed every moment of my stay in the hospital.

Dr. T.M.SUNIL, Bangalore
'This hospital is a Temple of Excellence'

Dr .B.M.S.UDHAGENDRA, Sri Lanka
'Highly impressive surgical unit'

Dr. AVINASH RANADE, Maharashtra
'The conviction and general attitude towards life and their work was the best thing that I learnt here'

Dr.SUPRATIM BOSE, Johnson & Johnson
'To see the vision, passion and commitment of Dr.Rajasekaran and Dr.Rajasabapathy to the welfare of patients is extraordinary and unmatchable'

Dr. PERRY HALL, U.S.A.
'I am very glad to have visited this most impressive hospital'

Mr EAIN FINDLAY ,UK
"I came to Ganga hospital as a medical student to study orthopaedics. For a medical student it was an ideal insight with plenty of opportunity for learning. The hospital provides as good medical care as any unit I have seen in the UK"

MrANDREW FROST,UK
"Highly impressed by the staff & facilities here, as good (or better)than anything I have seen in the UK"

Dr.HARDAYAL SINGH GHUMAN, Jalandhar
I am going back with the message of Dr.S.Rajasekaran 'You can alway improve yourself'

Dr.RAVI KANT SHARMA, Amritsar
'For me it is like having a holy dip in Ganga'

Dr.H.LALNGHAKLIANA, Mizoram
'Great regards for glorious Ganga Hospital'

GAURANG .J.SHASH, UK
" One of the best institutions I have ever seen, as far as teamwork, amount of work, Quality of work, Quality of people at work.

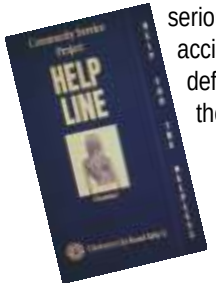
Dr. D TRAEGER, Germany
"……. A lot of beautiful & skilled work in Orthopaedics"

Reaching Out To The Community

Each man owes a debt to society, for it is the community and society that sustain him. Ganga Hospital realises the need to play a pivotal role in nurturing a healthier society. Towards this end, it has initiated a number of community service programs aimed specifically at the under-privileged sections of society. These projects have greatly benefitted needy families from these sections.

Project Helpline : 'Help For The Helpless'

Physical deformity in a growing child is more than just a physical disability. It is a major disaster not only for the child but for the whole family. These deformities cause psychological disturbances in the child and also cause a serious setback to their mental development. Deformities may be a result of birth disorders, accidents, poorly treated infections or inadequate nutrition. 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.



Realising this problem, the Orthopaedic Unit of Ganga Hospital has joined hands with Coimbatore City Round Table 31 to provide free treatment to such children. Surgeons treat these children free of charge and the hospital subsidises the treatment by more than 60%. The bare cost of the materials used is met by CCRT 31 and the charitable fund of the hospital. A wide range of deformities such as clubfoot, scoliosis have been treated under this project. About 100 children are operated every year and this project has been awarded the National Award of Round Table, India for the best community project

"

Visiting your hospital & 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 & Social worker

"

Clubfoot Correction

Rotary Road Accident Helpline Centres of Ganga Hospital

Ganga Hospital, in association with Rotary District 3200 has started Accident Helpline Centres at Mavuthampathy near Walayar and Kanjikode near 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 both these centres which are manned round-the-clock by the paramedical staff of Ganga Hospital.

Accident & Emergency - First Aid Care Project

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.Kuriachan & Sri. Narinder Pal Singh, IPS, Commissioner of Police, Coimbatore City, inaugurated the project. Dr. S.Rajasekaran is the District Chairman and Dr. J.Balavenkatasubramanian is the Project Coordinator. The aim of this project is to teach first aid measures to 10,000 people in the year 2001, from all walks of life like school children, police, college students, bank officials, drivers etc.

Free First Aid Care Centre with St. John's Ambulance Services, Tirupur

Ganga Hospital joined hands with St. John's Ambulance services to start a centre for free first aid at Tirupur on 27th May 2001. Mr.Santhanam, IAS, District Collector, Coimbatore, Mr.Radhakrishnan, Member of Parliament, Dr. J.G.Shanmuganathan, Chairman, Ganga Hospital and Mrs.Vimala Ramalingam, General Secretary, SJAA, were present on the occasion. The centre aims to provide emergency first aid care and ambulance service to transport the traumatised patient as quickly as possible to the parent centre. Since its inception in June 2001, 3963 cases have been attended to, of which 201 cases underwent life or limb saving surgery. All the cases are attended to free of charge and services are provided 24 hours a day, throughout the year.

GAINS (GANGA ACCIDENT INSURANCE SCHEME)

This scheme, initially brought about by the cooperation of Ganga Hospital and Oriental Insurance Company Ltd. was formally inaugurated by Mr. K.Radhakrishnan, IPS, Commissioner of Police and Mr. S.V.Balasubramaniam, Chairman, Bannari Amman Group of Companies. This scheme registered 2232 members. A new scheme at a still lower premium was started on 25th Dec. 2001 in association with National Insurance Company, for which a total of 554 people have already registered. For a nominal premium these schemes cover hospitalisation and medical expenses, provide cover for disability and also offer 1% of the insured amount for every week the insured is away from work.

GAINS

GANGA HOSPITAL BLOOD BANK

The hospital has a 24-hour Blood Bank with all advanced facilities for safe blood donation and transfusion. The blood bank meets the requirements of and offers services to all hospitals of the region. The Blood Bank is about to be upgraded to a regional blood bank centre after which it will provide service to a larger area. The bank is supervised by 4 medical officers, an administrative officer and 5 transfusion technicians.