



# THE SPINE FOUNDATION **JOURNEY**





Cover art by **Sneha Tomar**.

In 1999, Sneha was diagnosed with Scoliosis (a sideways curvature of a spine) at the age of 12. She had a 45-degree C-shaped curve. By the time she turned 13, her spine has progressed to such a point that surgery was the only option to correct it. She was operated on by Dr Shekhar Bhojraj. After surgery, she rejoined her school with a brace on her back that she had to wear 14 hours a day for two years. Since then, she completed her schooling, then college, and after that Sneha held full-time jobs. She now lives in Dehradun, Uttarakhand.

Sneha wants to encourage scoliosis warriors through her paintings. She wants to spread awareness so that young souls with scoliosis still feel beautiful with their scars, twisting and pain. And also each child should be screened for Scoliosis once every 6-months starting at the age of 9-years through the age of 14-years.

Sneha wants to tell Scoliosis Warriors not to be despondent and ashamed of their story as it will inspire others."Turn your scars into stars."



# MILESTONES

## 1988

- Dr Shekhar Bhojraj sets up the first spine surgery speciality unit in the country at KEM Hospital in Bombay

## 1993

- Dr Shekhar Bhojraj sets up the first dedicated private spine unit in India at Hinduja Hospital in Bombay

## 1998

- Dr Shekhar Bhojraj and Dr Shilpa Bhojraj establish The Spine Foundation on May 19

## 2003

- Dr Shekhar Bhojraj's first visit to Gadchiroli, in rural Maharashtra, to see the work being done there.

## 2004

- First OPD in Gadchiroli in association with SEARCH
- Paediatric spine unit set up at Wadia Hospital for Children, Mumbai

## 2006

- Dr Shekhar Bhojraj starts a low cost spine-care program at Dr HV Tilak Hospital, BDD Chawl, Worli, Mumbai

## 2007

- First rural spine surgery at a surgical camp in Gadchiroli, Maharashtra

## 2009

- The Spine Foundation opens its spine unit at VN Desai Hospital in Mumbai to reach out to the poor urban population

## 2014

- First scoliosis surgery at Nirmal Ashram Hospital, Rishikesh.

## 2015

- Specialised physiotherapy department for spine patients opens at VN Desai Hospital in Mumbai

## 2016

- Completion of 100 surgeries at Gadchiroli

- First OPD and surgical camp in Dhule, Maharashtra, at
- Shri Bhausahab Hire Government Medical College & Hospital

## 2017

- First OPD and surgical camp in Ambajogai, Maharashtra at Swami Ramanand Teerth Rural Medical College
- First OPD and surgical camp in Aurangabad, Maharashtra at Government Medical College
- First OPD and surgical camp in Akola, Maharashtra at Government Medical College & Hospital
- First OPD and surgical camp in Ratnagiri, Maharashtra
- First OPD in Sittilingi, Tamil Nadu in association with Tribal Health Initiative

## 2018

- First surgical camp in Sittilingi, Tamil Nadu in association with Tribal Health Initiative
- Signing of Memorandum of Understanding with the DMER/MUHS of Government of Maharashtra to replicate their model throughout the state.

## 2019

- Launch of Comprehensive Spine and Musculoskeletal Care Centre concept at Gadchiroli
- MOU with Public Health Department of Government of Maharashtra to initiate comprehensive spine care programs at Ratnagiri and Nandurbar civil hospitals
- District-wide training programs for Asha workers and rehabilitation teams
- Started RSCCs at Hans Foundation, Dharampur and HIMS Dehradun

## 2020

- Started online OPDs at Gadchiroli, Akola, Kolhapur and Sittilingi

## 2021

- New modular OTs commissioned at Ambajogai and Nandurbar.
- Conducted Scoliosis surgery at Dr DY Patil Hospital in Kolhapur.
- Mobile physiotherapy launched in Gadchiroli.

## 2022

- Started new RSCC centre at Swami Vivekananda Charitable Hospital in Uttarakhand





# HEALTHCARE IN INDIA

India is shining. Yet there is a lot of work still to be done before the sun shines on everyone.



*Even basic healthcare is a problem in rural parts of the country, let alone specialised medical care.*

India is a land of contrasts where ancient traditions co-exist with modern scientific temper. A country that wears its rich cultural tapestry as comfortably as it negotiates the corridors of global business. India is home to 1,406,631,778 people who follow nine religions, and speak more than 19,500 tongues, languages and dialects. Perhaps the only thing you will find across the land is a love for cricket and Hindi film songs.

India is a country on the move. Goldman Sachs predicts that India will be the third-largest economy in the world by the year 2050. India's GDP is growing at nearly 8% while the rest of the world average is hovering around 3%. India is only one in three nations to build supercomputers and one in five to launch communication satellites. A fifth of all Microsoft

engineers, you guessed it, are Indians. Hundred of the Fortune 500 companies have already set up R&D Centres in India.

**70% OF THE DOCTORS  
PRACTICE IN URBAN  
AREAS WHERE JUST 30%  
OF THE PEOPLE LIVE.**

This is a very short list of our many achievements. But before you go and knock open a bottle of champagne, consider these less-talked-about facts...

## THE HEALTHCARE BLACK HOLE

Nearly a fifth of the world's population lives in India, but there is just one doctor for every 1700 people. Even less developed countries have a better doctor-to-patient ratio. India urgently needs 500,000 more qualified doctors. A second problem is that 70% of the doctors practice in urban areas where just 30% of the people live. The reasons for this are many – from lack of basic infrastructure like housing, education, roads, water and electricity to a better and more financially profitable market for their services in urban centres.

Adding to the lack of doctors is another set of problems. India's healthcare sector is dominated by the private sector, and therefore expensive. On the other hand, the government public healthcare system is free, but ill-equipped. There has been a steady decline of government spending in healthcare over the years, leaving the poor fewer options than before. According to a World Health Organisation report in 2007, India ranked 184 out of 191 countries in the amount of public expenditure spent on healthcare out of total GDP. Private healthcare in India is expensive and a majority of people do not have any kind of health insurance. Poor people have to spend a disproportionately higher percent of their income towards out-of-pocket healthcare expenses than the rich. The high cost of private healthcare has led many households to fall into what's defined as Catastrophic Health Expenditure or CHE. CHE is health expenditure that threatens the household's capacity to maintain even a basic standard of living. One study has found that over 35% of poor households fall prey to Catastrophic Health Expenditure.

## WHAT IS THE SOLUTION?

Will we wait for the government to improve healthcare infrastructure and make quality healthcare accessible to the poor? Or hope that private healthcare will become affordable? Or simply turn a blind eye and say that there is nothing we can do about it? On the other hand, you can raise your hand, take responsibility and say that you will do something about it. And that's what the Spine Foundation did.



# THE BACKBONE OF LIFE

While spinal affliction is debilitating for anyone, its effects are worse if you are poor.

Someone once said that in order to succeed in life, you need three things: a wishbone, a backbone and a funny bone.

## WHAT HAPPENS IF THE BACKBONE IS COMPROMISED?

Millions of Indians suffer from afflictions of the backbone, from back pain to spinal disability. Back pain is amongst the top three reasons for doctor consults worldwide. People who are the backbone of their family or community are compromised by their own back problems. It doesn't just affect the patient's life, but the lives of their family or community as well.

Spinal care wasn't even a speciality or field, but rather a part of orthopaedics until about 30 years ago. It is only recently that spine care has emerged as a speciality in its own right. Unfortunately it remains an urban-centric speciality. The doctors spend their time and training in perfecting surgeries and treatment options specially catering to the top of the pyramid; cosmetic spine surgery, endoscopic spine surgery, total disc replacement, instrumented long segment spinal fusions for mechanical back pain to name a few. Spine care remains an expensive urban privilege.

## SPINE CARE FOR PEOPLE WHO CAN'T AFFORD SPINE CARE

That brings us to the question, what about the people at the bottom of the pyramid who can't afford this expensive spinal treatment, whose productivity and lives have been affected by spinal problems? What about the urban poor? What about the rural population? 70% of our population is rural, with little access to health care. And it is these poor people, dependent on

manual labour to earn a living, who are most susceptible to back problems.

A farmer has to spend a long time bending to sow and plow his crops. Women have to walk for miles carrying water on their heads. They have to travel on unsprung bullock carts over bad roads. Add to that the fact that they might be malnourished and you have the recipe for a spinal disaster. This can rob people of their mobility, leave them bed-ridden and seriously affect their lives. If this person happens to be the main bread winner in the family, the whole family goes hungry. The children's education suffers and they get burdened with debt. With no access to spinal care or treatment, these families sink into the poverty hole.

This is a problem not just in India but across the world. According to a report in the October 8, 2016 issue of the influential medical journal Lancet, low back pain is one of the top disability problems in the world. The authors of this report looked at 117 published studies covering 47 countries and data from national health surveys in many countries. The report also said, 'with ageing populations throughout the world, and especially in low and middle income countries, the number of people living with low back pain will increase substantially over coming decades'.

The sheer number of people at the bottom of the pyramid without access to basic health care, forget specialised spinal care, is huge. Can we simply ignore them? Can we make spinal care accessible and affordable to people who cannot afford it? How do we do it? How can we do it? What can be done to tackle the problem?

In a country as vast and populous as India, this might be just a drop in the ocean. But as we have learnt, every single drop matters.



*Leaning forward from a standing position puts more load on your spine and can result in back pain.*



*Sadly, people who are most vulnerable to back pain have the least access to spine care.*





*The Spine Foundation's vision is of spine care in all four zones of India – North, South, East and West.*

# A NEW THINKING IN SPINE CARE

**Bringing succour to the spine patients at the bottom of the pyramid requires more than just money. It requires a new thinking.**

In a perfect world, there would be no need for the Spine Foundation. But since we don't live in a perfect world, the Spine Foundation exists for the 'have nots'. It was established in 1998 to finance treatment of patients who cannot afford it, both in villages and cities. Not just a partial, but a complete coverage of their expenses from investigation to rehabilitation. The initial money for the foundation came from the medical community itself. When a doctor goes to another doctor for treatment, he is not charged either for consultancy or surgery. They pay back instead by donating to the Spine Foundation. The funds also came from the rich patients the Spine Foundation doctors treat in their normal urban practice, and philanthropists. This cross subsidy is a bit like the idea of Robin Hood taking from the rich and giving to the poor. Without the robbery, of course.

## RAISON D'ÊTRE OF THE FOUNDATION

The Spine Foundation was established to reach out to people who don't have access to quality spine care due to geographical and economic reasons. The mission of the foundation is to provide quality spine care to the underprivileged, even in the most remote parts of India. The foundation's vision is of spine care in all four zones of India – North, South, East and West. The Spine Foundation is working in collaboration with the Association of Spine Surgeons and the Association of Rural Surgeons in India, to reach out to places that

are under-served in terms of medical facilities. But what are the foundation stones on which this mission can be built?

It begins with the Spine Foundation's philosophy of providing economical options in spine surgery without compromising on quality. And these are the steps that the Spine Foundation has practised, popularised, propagated and published over the years.

First comes conservatism. Ask if the patient needs surgery at all? Can this patient be treated without surgery? Surgery is looked upon as the last resort. Doctors of the Spine Foundation have treated prolapsed discs and spinal tuberculosis without surgery and these cases have been published in reputed international spine journals across the world.

Second is the use of simplistic but innovative surgical techniques. There are dockets full of case studies where doctors have documented patients who were treated by using simple techniques with equal results as those of traditional, complicated and expensive surgeries. Again, case studies that have been published in many international journals.

That brings us to the third step; low-cost, affordable and low-tech systems and implants. The best way is to use no implants at all. Good old-fashioned surgical procedures that give excellent and comparable end results for treating conditions like spinal decompression or anterior cervical fusions. If you do have to use implants, there are low-cost indigenous

**THE MISSION OF THE FOUNDATION IS TO PROVIDE QUALITY SPINE CARE TO THE UNDERPRIVILEGED, EVEN IN THE MOST REMOTE PARTS OF INDIA.**



options that work as well. The foundation doctors have treated cases with thor-lumbar instability to neurofibro using indigenous, low-cost systems. Yes, those too got published as case studies across the world.

That brings us to the last step, easy-to-learn and reproducible methods. This is very important because the Spine Foundation wants to build a self-sustainable model to serve people with spine ailments in rural areas. It works along with various government and non-government organisations to reach out to them and help them live a better life.

**THE SPINE FOUNDATION MODEL**

Let's take a look at the model developed by the Spine Foundation to spread spine care in rural India. It begins by identifying government hospitals in locations that are accessible to the rural population. Then they do a survey of the real needs of the patients here, followed by a feasibility study. It is only after this that the decision is taken to go ahead with the camp, or not. If it's a yes, they start campaigning to raise awareness about the camp. Transportation facilities to the camp from the surrounding areas are also arranged. The first step is to set up the Rural Spine Care Centre to conduct regular OPDs and surgeries by the doctors of Spine Foundation who travel there for the spine care camp.



*They don't call it back-breaking work for nothing.*



*Spine Foundation trains doctors working in the interiors to identify and treat basic spine problems.*

The next step is to develop a support system by identifying local doctors who are interested in helping, assisting, learning and eventually taking over. They also train voluntary health workers in patient care, counselling, on-site diagnosis, nursing and physiotherapy.

The Spine Foundation networks with secondary and tertiary care centres while also involving local medical colleges and institutes towards developing better infrastructure and manpower.

The other thing that the Spine Foundation does is train the doctors working in the interiors to identify and treat basic spine problems. A referral practice chain from the interiors to these Rural Spine Care Centres via health workers and public healthcare doctors has been designed, known as the 5-filter system.

The first filter is the village health worker or community health worker who identifies the patient. The identified patient is then referred to the medical staff at a nearby Public Health Centre, filter two, that has the ability to treat minor medical cases. If the patient's needs can't be met here, they are referred to a district or civil hospital that acts as filter three. In case

the patient needs more specialised care, it is bumped up to an established orthopaedic unit or Rural Spine Care Centre that operates under the guidance of the Spine Foundation, which acts as the fourth filter. 95% of the patients are treated by this stage. It's only the most serious cases that are escalated to the fifth and final filter. The Spine Foundation pays for the patient to be brought to either VN Desai or Wadia Hospital in Mumbai where highly qualified doctors and fully equipped operation theatres are available.

There are many available government schemes and local health financing schemes that go to waste because people are not aware of them. The Foundation identifies and taps into these government programmes to fund its mission. The idea is to initiate the change, set systems in place so that it can be self-reliant and shift focus to the next centre, and challenge.

The doctors at the Spine Foundation realise that they cannot be everywhere and do everything by themselves. They are the enablers whose job is to seed the movement, share their knowledge and support the people for it to flourish.



*Illustration by Dr Shekhar Bhojraj.*



# THE GENESIS OF THE SPINE FOUNDATION

What started as one man's dream, reaches out to thousands of people across the country today with its message of hope.

Can you name the hospital with the first exclusive spine surgery speciality unit in the country? In 1988, it was a government municipal hospital that was at the forefront of spine surgery and treatment in India – KEM Hospital in Bombay. The man behind this was an orthopaedic surgeon at the hospital who came from a family of freedom fighters and doctors, actively involved in social service – Dr Shekhar Bhojraj.

## INDIA'S FIRST SPECIALISED SPINE SURGEON

In the early 80s, there were no specialised spine surgeons in India. Orthopaedic surgeons were caretakers of the spine. While Dr Shekhar Bhojraj practised as an orthopaedic surgeon, the cases that interested him the most were patients who came to him with back problems. The backbone of a person is literally the backbone of his life, family and community. A broken arm or leg can be fixed easily, but when a person develops a problem with the spine, the solutions are not that simple. This debilitating condition could alter the course of a person's life. Interestingly, the spine provides both stability and mobility. And when any of these two factors is missing from a person's life, the result can be catastrophic.

Though surgeons across the world were working on spine care for decades, it was only during the 1980s that spinal surgeons truly began to understand the spine in all its intricacies. While neuro-imaging was introduced

in the 1970s with the CT scanner and the development of the MRI, it was only in the 1980s that instrumentation was refined and spine surgery came into its own. Dr Bhojraj kept himself abreast of the latest developments in the emerging world of spine surgery.

When Dr Shekhar Bhojraj set up the first exclusive spine surgery speciality unit at KEM hospital, he decided to give up all other orthopaedic work and concentrate solely on the spine. And with that, he became the first specialised dedicated spine surgeon in the country.

Though there was stellar work that was being done at KEM, it had its limitations. It was a municipal hospital, therefore facilities and funds were limited. Dr Bhojraj needed a bigger platform if he was to get the best advancements in spine care to India. As they say, if you really want something, the universe conspires to get it for you. In this case, it came in the form of a phone call from Mumbai's Hinduja Hospital, who wanted him to set up a specialised spine unit. They had the funds to further Dr Bhojraj's study and finance a more specialised spine care unit. He joined Hinduja Hospital and in 1993 set up the first dedicated private spine unit in a hospital in India.

Dr Bhojraj's career was on an upward graph. His papers in international publications about the work done in India earned him laurels from his professional peers around the world. While Dr Bhojraj had the world at his feet, there was emptiness in his heart. He came from a family of social workers, not a capitalist family.

THE SPINE PROVIDES BOTH STABILITY AND MOBILITY. IF ANY OF THESE TWO FACTORS IS MISSING, THE RESULT CAN BE CATASTROPHIC.



Dr Shekhar Bhojraj set up the first exclusive spine surgery speciality unit at KEM hospital.





*Dr Shekhar and Dr Shilpa Bhojraj, the founder trustees of the Spine Foundation.*



*Dr Bhojraj found the simplicity and the way of life in Gadchiroli extremely appealing.*



*Dr Abhay and Dr Rani Bang have changed the lives of people in Gadchiroli through their work.*

While he had brought spine care and treatment to India, there were millions of people around the country who could not, and would not, benefit from all his learnings.

**SEEDING THE SPINE FOUNDATION**

He didn't know how to do it. He didn't know what he had to do. He only knew that he had to do it. Spine care couldn't be the privilege of the urban rich. Rather than wait for outside or government help, Dr Bhojraj decided to put his money and time where his heart was. On 19th May 1998, Dr Shekhar Bhojraj along with his wife Dr Shilpa Bhojraj, a practising consultant anaesthesiologist super-specialised in cardiac anaesthesia, established the Spine Foundation with the two of them as founders and started to treat poor patients. By 2003, the Spine Foundation had made a difference to thousands of people across Mumbai. But what it lacked was a clear roadmap. This was about to change when Dr Bhojraj came across a news article about a doctor couple working in a very backward adivasi area in eastern Maharashtra. They had just been given the Maharashtra Bhushan award for the fantastic work they were doing there. He decided to go and see what Dr Abhay and Rani Bang's work was all about. This would have a profound effect on Dr Bhojraj and the Spine Foundation.



*The backbone of a person is literally the backbone of his life, family and community.*

**FINDING A NEW PATH**

It was a scorching summer afternoon in 2003 when Dr Bhojraj accompanied by his 19-year-old son Tejas, landed in Nagpur airport. They then boarded a car for a four-hour ride over broken roads to the town of Gadchiroli. Their destination was a further 20km drive from the town. The place was named Shodhgram, and this was the campus from where Dr Abhay and Rani Bang conducted their work. Shodhgram is an amalgamation of healthcare, community living and research that has inspired many national and international health initiatives. It had been designed to represent Gandhi's ashram and a tribal village. Situated inside the forest among tribal villages was where the doctors lived with colleagues and their families. It was from here that they treated, trained, researched and sought solutions to the people's health issues with their active participation.

Dr Bhojraj came as a 'tourist' to meet Dr Abhay and Dr Rani Bang and see the work they were doing. But what he found instead was inspiration for the Spine Foundation. In this hinterland, Dr Bhojraj experienced

a serenity, simplicity, dedication and work culture that were close to his heart.

Dr Bhojraj discovered that poverty, illiteracy, malnutrition and heavy manual labour gave rise to high child mortality, sickle cell diseases, anaemia and back problems. The rural and tribal people had complained that backache was their major problem. The doctors at Gadchiroli were in search of a solution to this large-scale condition. As part of their scientific approach, they were trying to design epidemiologic and community-based studies to estimate the magnitude and the consequences of this problem. But they also wanted to find a solution to it. Now, as a spine surgeon, back problems was something that Dr Bhojraj knew a thing or two about. He realised that this was a golden opportunity to help these people. He would be a part of a great social service organisation with an international standing and a target population under constant monitoring and control.

The Spine Foundation had found its way. But what exactly was happening in Gadchiroli that created this major shift in the Spine Foundation?



*Hinduja Hospital in Mumbai.*



# FINDING PURPOSE IN GADCHIROLI

Dr Abhay Bang and Dr Rani Bang show the way to affordable healthcare in a small village in the backward area of Gadchiroli.



*Dr Abhay Bang and Dr Rani Bang have brought hope, love and social upliftment to thousands of vulnerable tribal communities in Maharashtra.*

Gadchiroli is 1000km from Mumbai and 200km south of the nearest airport in Nagpur. It's a two-hour flight from Mumbai, and then a five-hour drive from Nagpur. Gadchiroli is home to Dr Abhay Bang, an MD in Medicine and his wife Dr Rani Bang, an MD in Obstetrics and Gynaecology. Their story is really inspirational and merits retelling.

## TWO SOULS, ONE DREAM

Abhay and Rani Bang completed their MBBS from Government Medical College, Nagpur, Maharashtra in 1972. This was where they met. Abhay Bang, who came from a Gandhian family, had spent his childhood at Mahatma Gandhi's Sewagram ashram in Wardha and studied in a school started by Gandhi and Rabindranath Tagore. Rani Chari, on the other hand, came from a wealthy family but preferred to wear ordinary cotton saris, wear no jewellery and live in a hut. As they discovered, their life's dreams and aspirations were quite similar. Thereafter they both completed their Masters, Rani in



## PADMA SHRI 2018

■ Dr Abhay Bang and Dr Rani Bang received the Padma Shri in Medicine from the President of India, Ram Nath Kovind, at Rashtrapati Bhavan on March 20, 2018.

Obstetrics & Gynaecology and Abhay in Internal Medicine. Incidentally, both were toppers throughout their academic years. They could have got high-profile, high-paying jobs, or could have set up lucrative practices but chose instead to serve the poor of India. They returned to Wardha and set up a clinic to work amongst the poor, but soon learnt their first lesson - village problems cannot be solved by merely providing medicines!

The question of how to do relevant public health research in Indian villages finally led them to the Johns Hopkins University, Baltimore, USA, where their aim was to learn the science of public health research. America was a dollar-intoxicated country; but it was also a knowledge-intoxicated country. The Johns Hopkins University was a rich repository of knowledge on medical research in Indian villages. Here they learnt the fine art of research and ways to generate new knowledge. After finishing their Masters in Public Health, they decided to return to India. Their destination - Gadchiroli, one of the most deprived districts in the state of Maharashtra.





*The Spine Foundation doctors at SEARCH, Gadchiroli hold regular OPDs.*



*Back pain is the most commonly reported ailment.*



*Doctors have to adapt to make the best out of limited resources.*



*Doctors of the Spine Foundation bring their expertise to Gadchiroli.*



*SEARCH reaches out into villages to bring healthcare to the people at their doorstep.*



*Shodhgram is an amalgamation of healthcare, community living and research.*

THE WOMEN WERE TAUGHT HOW TO DIAGNOSE PNEUMONIA, RESUSCITATE CHILDREN AND TO ADMINISTER BASIC ANTIBIOTICS.

#### MAKING A DIFFERENCE.

In 1985, Dr Abhay and Rani Bang founded SEARCH (Society for Education, Action and Research in Community Health). They started holding regular People's Health Assemblies where the local inhabitants could voice their concerns. Infant mortality emerged as one of the most pressing problems. In 1988, 121 newborn babies were dying out of every 1000 births in the area. They found that there were 18 causes that may have been responsible for that infant's death, ranging from diarrhoea, infection or pneumonia, to lack of a hospital. The challenge was to save an infant who can die of 18 possible causes. The Bangs and their colleagues at SEARCH conducted world-class research on practical approaches to reduce mortality of young children in resource-constrained settings. They found a simple but radical solution - training the village women in neonatal care. The women were taught how to diagnose pneumonia (using an abacus designed by Dr Abhay Bang, to count breaths), how to resuscitate children and how to administer some basic antibiotics. Instead of villagers having to walk for miles to get to the nearest hospital, these health visitors (called *arogyadoot* which means 'health messengers') went to where they were most needed, carrying a small health pack on their backs. As more women were trained, they passed on their knowledge to others and according to Dr Bang, entire communities became "empowered".

Subsequent work by Dr Bang and his colleagues in two of the most notable of their studies demonstrated the feasibility and effectiveness of community-based management of childhood pneumonia and the provision of home-based neonatal care by community health workers. The Indian government picked up and replicated Shodhgram's concept of home-based mother and newborn care through Accredited Social Health Activist (ASHA). This is just a tiny fraction of all the work done by them at Gadchiroli. If you haven't heard about them, there's a trove of information available about these Padma Shri awardees who were bestowed this honour in 2018. This introduction is necessary to understand the road map followed by the Spine Foundation.





# FINDING A NEW WAY IN GADCHIROLI

Doctors used to urban infrastructure and modern equipment learn how to do more with less from the doctors at SEARCH.



Within a year of his visit to Gadchiroli in 2003, Dr Bhojraj went back there with a team of specialised spine doctors to treat these vulnerable and poor patients whose lives had been paralysed by back problems.

Dr Bhojraj and the team were clinicians and surgeons used to urban infrastructure. Now, they had to evaluate, diagnose and manage these cases without the back-up of sophisticated gadgets and fancy investigations. Their urban 'investigation friendly' setting had over the years corroded their clinical skills and the doctors had to get back to the basics of what they had learned. In this place, the doctors had to rely on their diagnostic skills rather than specialised investigations and start treatment using the most simplistic interventions.

The sheer number of people who turned up for their first camp was overwhelming. And they were far away from the infrastructure and equipment they were used to. They had very limited funds, and any intervention on their part had to be cost effective. The Spine Foundation doctors had to think differently.

#### LESSONS FROM A BATTLEFIELD

The doctors at SEARCH, Dr Abhay and Dr Rani Bang, neurologist Dr Yogesh Kalkonde and public-health trained young Dr Anand Bang, had taken the concept of 'diagnostic triage' and adapted it to meet their needs.

Diagnostic triage was first used by French doctors treating the battlefield wounded at the aid stations behind the front, during the first World War. The term 'triage' comes from the French verb trier, meaning to separate, sift or select. The battlefield doctors would divide the wounded into three groups.

- Those who are likely to live, regardless of what care they receive.
- Those who are unlikely to live, regardless of what care they receive.
- Those for whom immediate care might make a positive difference in outcome.

The Spine Foundation doctors too decided to follow their lead and divided the patients into three groups.

The first group of patients was those who were suffering from lower back pain, without the accompanying leg pain and showed no symptoms of any serious spine disease. They formed 80% of the people who came to them for treatment and did not need any kind of surgical intervention.

The second group was those who were suffering from neural compression and they made up 15% of the patients. They could be treated using simplistic surgical techniques and low-tech methods instead of complex and expensive ones, yet give the same results.



**Baburao is back on his feet thanks to the doctors at Spine Foundation.**

Under Dr Rani Bang's leadership, SEARCH had set up a small 30-bed hospital of huts to operate upon the patients with chronic surgical problems. The approach was feasible and popular. Could it be applied to the 15% patients with spine problems in need of surgery?

There was only one way to find out, and that was to do it. No doctors in the world had ever dared to do spine surgery in a rural setting. Not even one of Dr Bhojraj's inspirations, Dr Oheneba Boachie Adjei, a top spine surgeon who had given up his good life in America to return home to Ghana and treat the poor in his country. If Dr Bhojraj succeeded in doing spine surgery in rural Gadchiroli, it would be a world first.

## GADCHIROLI IS AN IMPORTANT MILESTONE FOR THE SPINE FOUNDATION, NOT BECAUSE OF THE WORK THEY ARE DOING, BUT FOR WHAT IT TAUGHT THEM.

#### GOING WHERE NO SPINE SURGEON HAS GONE BEFORE

Confounding all naysayers, in 2007, the doctors of the Spine Foundation did their first-ever spine surgery in Gadchiroli. Using rudimentary equipment and operating in basic conditions, the finest spine surgeons in India wrote a completely new chapter in spine care that day.

That still left 5% of the patients who formed the third group. They were suffering from serious spine diseases, namely fractures, tumours and infections. They needed specialised surgery using specialised equipment, that could not be done outside of a speciality hospital.

So what happens to the 5% serious cases? Dr Bhojraj and his team couldn't just abandon them since there was no way to treat them at this rural setting. If they left these patients untreated, the mission would be incomplete. It wouldn't be the comprehensive care that they had promised to bring to the people.

The Spine Foundation funding provides for everything; medical investigations, treatment, admissions, surgery, rehabilitation and the patients' ultimate placement back into the society, so that they can once again be productive members of the society. And if that means that the patient has to be moved to where the Spine Foundation doctors can treat them, the foundation pays for it.

The Spine Foundation's connection with Gadchiroli has grown over the years. In the first surgical camp, they operated on seven patients. In 2017, they operated on 17 cases in a single camp. So far they have treated 3642 patients in camps and clinics at Gadchiroli. And operated on 165 serious patients.

#### THE DOUBLY DIFFICULT CASE

When Baburao, a farmer, came to the doctors at the Spine Foundation camp in Gadchiroli, he was suffering from back pain so severe that he couldn't even button his shirt, let alone walk straight. This man, whose livelihood depended on physical labour, was diagnosed with 'tandem spinal stenosis' which means that his nerve was getting pinched in two or more places in the spine. Investigations revealed that Baburao had compression of the nerves in the neck and lower back. So the doctors had to do not one, but two operations to treat him. The problem was that patients here were terrified of surgery, and to convince Baburao to go under the knife twice was



**CLOCKWISE FROM TOP LEFT: Dr Rani Bang after her surgery with other patients; Dr Abhay Bang with doctors of Spine Foundation; Spine clinic at Gadchiroli**

impossible. So the doctors decided that two teams of surgeons would operate on the same patient at the same time; one would treat the compression at the neck and the other would operate on the lower back. Spinal surgery by itself is a tricky procedure, a tandem surgery doubles the difficulty and then, to do it in a rudimentary camp in Gadchiroli, just compounds the challenges the doctors had to face. In spite of the enormity of the task facing them, the doctors delivered and Baburao is now back on his farm and completely cured.

#### THE BEST ENDORSEMENT

Perhaps the most important patient the Spine Foundation doctors operated upon at Gadchiroli was Dr Rani Bang, one of the founder trustees of SEARCH. She was suffering from lumbar canal stenosis, a condition where the nerves get pinched in the spine. This makes it difficult for the patient to walk more than a few steps. Dr Rani Bang had the



option to get operated at any of the specialised hospitals anywhere, but she chose to get operated at Gadchiroli amongst her own people. "When I am asking my people to get surgery done here, why should I be treated any different?", was her question. Dr Rani Bang is now back at work, leading SEARCH to greater heights at Gadchiroli.

#### LEARNINGS FROM GADCHIROLI

Treatment of patients was just one part of the objective; the doctors of the Spine Foundation also had to collect and analyse the data collected during these camps so as to be able to get a picture of the problems facing them, and what they needed to plan for the future. Apart from the medical service that they were providing, the Spine Foundation initiated a research program in 2010 with four teams of spine surgeons, rheumatologists and physiotherapists involved in the study of lower back pain cases at Gadchiroli. They will soon publish these

observations with constructive inferences and guidelines to set up a model for cost-effective healthcare for back problems. The findings will be beneficial not only to India but to all developing countries with limited resources.

Gadchiroli is an important milestone for the Spine Foundation, not merely because of the work they are doing here but for what it has taught them. SEARCH has a philosophy of 'Go to the people' and a methodology of combining science with the needs of the people to develop appropriate solutions. Dr Bhojraj and his team made the valuable addition of professional expertise on spine care, including surgical care. When these two strengths came together – a practical approach which was tried in Gadchiroli for more than ten years – it gave the Spine Foundation a model that could, and would be replicated across the country. In the following pages, we will look at how it spanned out. And the biggest challenges facing them.





# INDIA'S FIRST SPECIALISED PAEDIATRIC SPINE UNIT

The Spine Foundation reaches out to the little ones at Mumbai's Bai Jerbai Wadia Hospital for Children to give them a better future.

You might be the richest man in India living in an ivory tower, but you will need to keep your window curtains closed if you don't want to see the squalor and slums that permeate Mumbai's landscape like festering wounds. While you cannot miss the wretched poverty, it is easy to miss out the dregs at the bottom of this barrel, the children. Not just children, but the sick and the disabled children.

It is precisely for these young ones in need that the Bai Jerbai Wadia Hospital for Children exists. Founded in 1925, this hospital has Mumbai city's first orthopaedic department for children, established by the late Dr RJ Katrak. It is now an established Mumbai University of Health Science fellowship teaching centre for Paediatric Orthopaedics.

The hospital's website declares that "It is our aim at The Bai Jerbai Wadia Hospital for Children to ensure that each child is given the healthcare, attention and love they deserve, regardless of the socio-economic background they are born into. We believe that every child should have the power to design their own destiny and until they can, we're here to help".

## THE CHALLENGES OF PAEDIATRIC SPINE SURGERY

While there was an orthopaedic department at Wadia Hospital, it had no speciality spine unit. It was the orthopaedic department that treated the spine cases. In 2004, the Spine Foundation decided to start a paediatric spine unit at Wadia and Dr Bhojraj started treating children at this charitable hospital. This was the first specialised paediatric spine unit in the country.

Paediatric spine surgery is by itself tricky. Children are not a miniature version of adults. Anatomically and physiologically, there are a lot of differences. Bones in children grow longitudinally and appositionally, and remodel during growth. Bones in children are damaged more easily, but also heal much faster. But what made treatment at Wadia challenging for Dr Bhojraj and his team was a combination of social and economic factors.

The first is that children with spine tuberculosis were clinically presented in the relatively advanced stage by the parents. The second factor was how to optimise limited funds. And third, there was no universal standard technology to treat these kind of cases with limited resources. But a good surgeon doesn't blame his tools. And so the doctors had to chart the way to deliver good results in deformity surgery at lower costs.

It meant moving away from the most modern surgical techniques to the most optimum technique, using locally made implants and operating in basic set ups. Think of a modern airline pilot used to a cockpit kitted

with advanced aids having to use his stick and rudder skills while flying a basic two-seater trainer.

They say that necessity is the mother of invention. In this case, invention and innovation. The doctors had to innovate when it came to surgical techniques and work with the industry to engineer locally made growth rods and rib expanders.

## ATHARVA MANGAVE IS NOT A NUMBER

Wadia Hospital has 50 beds in the orthopaedic department. Over 2000 patients are admitted, 3500 patients are treated at the OPD and 1000-1500 surgeries are carried out at the hospital every year.

While these are just numbers, it is important to remember that behind every number is a face, a name, a child and a family. One such name is Atharva Mangave, who hails from Narsobawadi, a small town located at the confluence of Krishna and Panchganga rivers about 50km east of Kolhapur in Maharashtra. It's a major pilgrimage

centre for Dattatreya devotees who flock here to the temple of Shri Narasimha Saraswati, an avatar of Lord Dattatreya. Atharva had been born with a congenital anterior chest wall defect. He was brought to Wadia when he was three years old. The defect affected his spine and also decreased his lung capacity, causing infections and thereby affecting his health. Remember that a child's bones are always growing, so there could be no one-shot solution to stabilise his spine. The doctors put in growth rods to harness the spinal column and lungs while maintaining the spinal alignment. Till Atharva turned seven, he had to return to the hospital every six months, and then once a year till he turned 11. After the final surgery, Atharva started gaining weight and thriving. Today he is just another happy child. The doctors of the Spine Foundation have given Atharva a new life. As Dr Abhay Nene, who heads the Paediatric Spine Unit at Wadia, puts it, "*woh teden hain, pur hamare hain*", which roughly translates to, 'though born crooked, they are still our babies'.

IN 2004, THE SPINE FOUNDATION DECIDED TO START A PAEDIATRIC SPINE UNIT AT WADIA. THIS WAS INDIA'S FIRST SPECIALISED UNIT OF ITS KIND.



Dr Abhay Nene, who heads the Paediatric Spine Unit at Wadia, with one of his little patients.



# REACHING OUT TO THE URBAN POOR

Establishing a specialised spine care unit in Mumbai to help the less privileged, who constitute a large part of the urban population.

Establishing a specialised spine care unit in Mumbai to help the less privileged who constitute a large part of the urban population.

Mumbai, the maximum city. A city overflowing with people, with dreams in their eyes and desperation in their souls. Where the outstation trains come into the platform to disgorge a swarm of moths to the bright city lights. Starry-eyed dreamers following the footsteps of the Bangkok cook turned superstar Akshay Kumar. People pregnant with ideas seek a home for their prodigious talent. People possessed by the spirit of entrepreneurship seek absolution in the city of gold. People fleeing poverty, exploitation, and persecution come here not just for a better future, but for any future. This is a city straining at its seams but somehow magically adjusts to make place for, one more.

### BATTLEGROUND MUMBAI

It was in the fetid air of this city that the Spine Foundation found a new breath. Dr Bhojraj after his visit to Gadchiroli realised that sometimes our search for answers takes us far from home, only to recognise that it lay all this time right under our noses. Dr Bhojraj and the Spine Foundation had found meaning and direction in the work done by the doctor couple in distant Ghadchiroli but had come back to realise that there was a bigger challenge facing them at home – the urban poor. Wedged between a creaking public healthcare infrastructure and an expensive private medical community, thousands of people were drowning in a quagmire of apathy, incompetence and greed. The poor could not, literally, afford the rising cost of living.

Mumbai is home to over 22 million people. The government and municipality run five tertiary teaching hospitals to serve the denizens of this megacity. A tertiary hospital is a large hospital which usually offers a full complement of services like paediatrics, obstetrics, general medicine, gynaecologist, surgery etc with specialist doctors. Patients are often referred from smaller



Mr Dalal of Pentagon Charitable Foundation and Dr Bhojraj inaugurating the OT at VN Desai.

hospitals to a tertiary hospital for major operations, consultations with specialists or when sophisticated intensive care is required. Little wonder that these five main Mumbai hospitals are flooded with patients and the waiting list is endless.

To support these hospitals there are 20 peripheral hospitals across the city. These hospitals face many challenges, ranging from a lack of manpower and specialists to a lack of essential equipment and infrastructure. Therefore anything apart from very basic and routine treatments all other cases are referred to one of the five tertiary hospitals. So the patient has a choice, join the endless queue or sell off everything the family owns and get treated at a private hospital.

After returning from Gadchiroli, Dr Bhojraj wanted to do something for Mumbai's urban poor. The task seemed too big and the challenges too unsurmountable. How would they reach out to the people, and where would they treat them?

### FINDING ITS FEET IN MUMBAI

The answer came in the form of Dr Madhav Sathe, a consulting anaesthetist who is also the driving force behind the Bombay Mothers & Children Welfare Society. He offered Dr Bhojraj space at Dr HV Tilak hospital. This municipal hospital is located at BBD Chawl in Mumbai and is visited by the lesser privileged sections of the society who receive treatment here at subsidised rates. In 2006, Dr Bhojraj started a low-cost spine care program here. The experiment turned out to be a success and the spine care ward was soon a buzzing hive of activity where the poor patients could access quality spinal treatment. But the good doctor was not satisfied. He wanted to reach out to more people and for that, the Spine Foundation needed a big municipal hospital. What could he do?

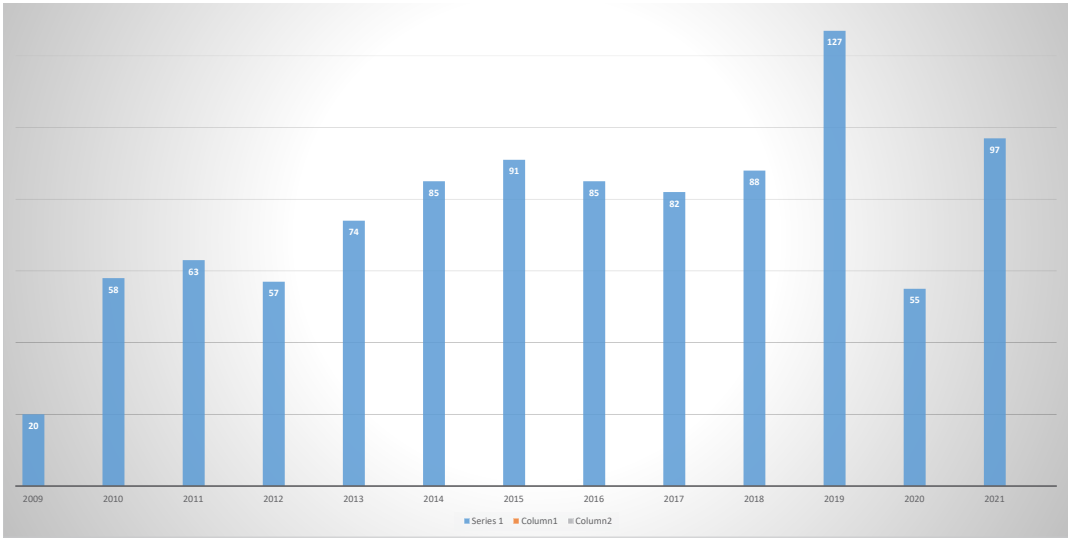
This is when Dr Bhojraj came across a Mumbai-based NGO called the Center for Study of Social Change (CSSC) that has been quietly working in Mumbai's H-East ward. For those who know Mumbai, the H-East ward covers an area of roughly over 13 sq km. Its boundary extends from the Mithi River CST Road to the localities of Vakola and Kalina to the Dharavi Link Road and Vile Parle Subway. Though over 10 lakh stay in Mumbai's H-East ward, over 75% of them stay in slums. This whole ward is served by just seven government health posts, six dispensaries, one maternity facility and one general hospital – VN Desai Municipal Hospital in Mumbai's Santa Cruz, East.

CSSC was founded in 1971, and as its brochure states it 'essentially works for integrated human development by bridging the gap between knowledge and activity. As the NGO had discovered, for any significant social change the first step is the participation of women. Dr Amartya Sen has said, 'Women should no longer be seen as the beneficiaries of development but must themselves become the agent of change'.

CSSC had set up a Woman of India (WIN) network that promoted health, family planning, education and income generation. Under the health scheme, health



### TOTAL NUMBER OF CASES OPERATED AT VN DESAI SINCE ITS INCEPTION IN 2009: 962



workers from the NGO went door to door and then if needed, referred the patient to one of the 20 WIN clinics it ran in this ward. It also ran camps and health programs from its campus. More serious cases were referred to the VN Desai Municipal General Hospital.

While having his morning cup of tea one rainy morning when you wonder if God is showering his blessings or hurling down curses, Dr Bhojraj had an idea. Despite all the work done by the NGO, there was one thing missing – spinal treatment. And who better to fill that gap than the Spine Foundation? The Spine Foundation would set up a specialised spine unit at the VN Desai Municipal General Hospital to serve the poor in this ward. The simplistic techniques and low-tech methods they had practised so successfully at Gadchiroli could be used here to make spine treatment accessible to the poor. And they would be able to help a larger number of people.

### REPLICATING THE GADCHIROLI MODEL IN MUMBAI

It was easier said than done. When the Spine Foundation







first proposed the idea everyone was sceptical. There was just no precedent for such an idea. VN Desai Municipal General Hospital, named after Mumbai's mayor the Late Vishnu Nandrai Desai, was a municipal hospital with funding from the government. Moreover, the hospital had no manpower or infrastructure to spare for the Spine Foundation. But Dr Bhojraj and his team were not ready to accept defeat. They steered through every obstacle, reached out to every power they could and worked ceaselessly to make it happen. Finally, in 2009, the Spine Foundation opened its spine unit at the VN Desai Municipal General Hospital to bring spine care to the people who could not afford it.

Though they had successfully managed to start the spine unit at VN Desai Hospital, the team faced many challenges. There was a dire shortage of physicians, anaesthetists, physiotherapists, nursing staff and ward boys needed for the smooth running of an operation theatre. Moreover, the equipment would fail frequently and surgeries had to be cancelled. The hospital's ICU too didn't have all the facilities that were needed and had to refer their patients to better-equipped hospitals. In case you needed blood after working hours, you could not. Patients who were not covered by a government medical scheme like the Rajiv Gandhi Jeevandayee Arogya Yojana (a health scheme run by the Government of Maharashtra for the poor people of the state) did not qualify for the subsidised health care. And even when they did, the patients had to bear the cost of medications and investigations not available at VN Desai Hospital. Any purchase the hospital had to do had to be routed through its few registered vendors and any decision had to go through six steps of approval. It was like waiting six months for a run-out decision by an



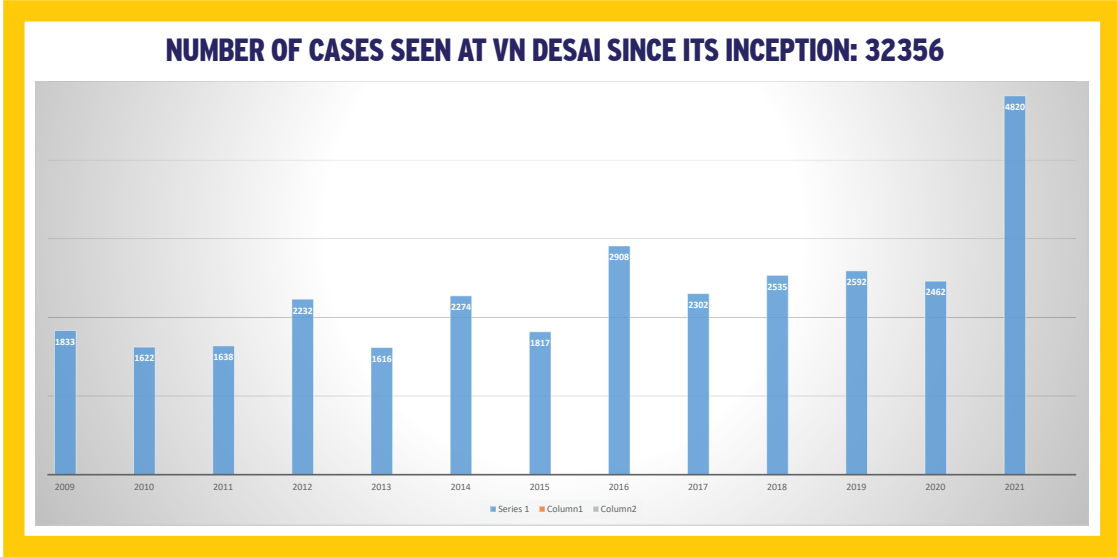
The Spine Foundation team at VN Desai is not just treating poor spine patients but facilitating other medical professionals in this specialised field. Postgraduate residents of DY Patil Hospital Kolhapur come here on a monthly rotation for experience and training in spine treatment. The Spine Foundation also aims to train physiotherapists for physiotherapy and rehabilitation of spine patients along with OT, ward nurses and staff for the care of spine patients.

### STILL, A LONG WAY TO GO

Are things at VN Desai Hospital perfect now that the Spine Foundation has pitched in? Far from it. It needs money to set up MRI and CT-guided spinal procedures. It needs equipment like a proper neuro spine microscopic system and a complete endoscopic system with proper navigation tracking and visual integration. It needs manpower and resources. It needs more NGOs, watchdog committees, public-private partnerships and citizens to get involved.

Yes, Mumbai is a city whose streets are paved with the potential of gold. But there are different understandings of what this gold is. For some it is money. For some it's fame. While for others it's a chance to give back something to the people, to be a part of the solution. And that is what makes all the difference.

This experiment at VN Desai can be replicated across the country to bring relief and succour to the urban poor.



umpire in a cricket match. While there was a bigger war to be won, the Spine Foundation decided to concentrate on the smaller battles, that it could win. They decided on three fronts – mindset, manpower and money. In its very first year of operation, The Spine Foundation treated 1833 patients and performed 20 surgeries at VN Desai Hospital. While it was the doctors of the Spine Foundation who were the face of this change, there are many other people and organisations who helped make this happen. The Pentagon Charitable Foundation offered to sponsor the operation theatre that the hospital needed and thanks to their help the hospital has a well-equipped OT running today. By 2017 the number of OPD patients had gone up to 2303 and 83 surgeries were done that year. And with each passing year, the number of poor patients just kept

multiplying. And then came 2019 and the Coronavirus decimated the world. This was the time when the poor became even more vulnerable. The Spine Foundation doctors fought through the difficult conditions and shortage of everything including oxygen, to continue treating medical emergencies. These emergency surgeries done under spinal anaesthesia are a challenge at the best of times, became a critical test of the doctors' skill and excellence under Covid's ominous shadow. It is these difficult times that bought out the best in The Spine Foundation. Just because The Spine Foundation treats poor patients for free does not mean that the patients get second-class treatment. At VN Desai, the foundation performs complicated surgeries like those for congenital scoliosis correction with help of neuro monitoring. The Spine Foundation doctors have also started doing minimally invasive surgeries in VN Desai hospital, like

tubular microscopic surgeries (using ENT microscope), endoscopic surgeries (using an arthroscopic video monitoring system), and complex intradural spinal tumour surgeries in a team with neurosurgeons. Thanks to the foundation's generous donors, the OT at VN Desai has been renovated and today this hospital boasts of modular OT with laminar flow and proper anaesthesia setup which is as good as any other operation theatre you would find in any private five-star hospital in Mumbai. Thanks to this sterilised OT, surgeries at VN Desai have become safer with a lesser chance of infection and other complications. Complication rates of surgeries in VN Desai hospital are at par with the best private hospitals in Mumbai. The Spine Foundation has treated over 32,000 patients and operated on 960 patients at VN Desai alone. This is by the middle of 2022. In a few months, it would have done 1000 surgeries, free of cost at VN Desai in Mumbai!





# FROM IMMOBILITY TO MOBILITY

A specialised physiotherapy department for spine patients at the VN Desai Hospital helps patients get back to their feet and live functional lives.

## BEYOND SURGERY. COMPLETE REHABILITATION

In 2015, the Spine Foundation decided to take the additional initiative to rehabilitate the patients after surgery through physiotherapy. Though VN Desai already had a Physiotherapy department, the needs of a spine patient are very different from other patients. Instead of general pain management, specialised spine rehabilitation protocols have to be followed for these patients as per their condition. Physiotherapy for spine patients has to concentrate on strength and balance training. In short, they have to learn how to walk again!

Dr Gaurish Kenkre, a very experienced and certified Bobath and adult neurology rehabilitation practitioner trained at WCRC, Cape Town, South Africa was put in charge of this. There was no equipment and the challenge facing Dr Kenkre was daunting but in the finest tradition of the Spine Foundation, he improvised. He used everything he could lay his hands on – broken stools, old walkers, railings, saline stands – to make patients exercise. The few patients that needed specialised equipment were taken to a specialised physiotherapy centre at Worli, Mumbai. Though the centre at Worli didn't charge the foundation, there was a taxi expense of about Rs 500 which the foundation paid for. Things are slightly better today, but the Physiotherapy department still needs essential equipment like splints and walkers that cost about Rs 2000, the price of a dish at a 5-star restaurant.

## THREE CASES

**RUSHADA KHATOON:** When this little girl was brought to VN Desai from Uttar Pradesh, she was paraplegic and both her lower limbs were paralysed. She couldn't even stand on her own two legs, and the little girl's future seemed dark. The doctors of the Spine Foundation wouldn't let that happen if they could help it, and what followed was a long and complicated operation. Though the surgery was a success, it was just the beginning of a long journey for

the child. Dr Kenkre put her through a long and intensive physiotherapy regime to make her walk again. Today she is just another little girl, playing with her friends.

**RAMESH THAKUR:** This man had been bedridden for two months with Ankylosis spondylitis with Anderson's lesion when he was operated upon by the doctors of the Spine Foundation. Dr Kenkre and his team ensured that he was walking within a month of his operation.



Rushada Khatoon



Ramesh Thakur

**AMAN SHARMA:** This boy from Uttar Pradesh came to the Spine Foundation doctors in September 2015. Aman had dorsal laminectomy and fixation. He had been operated elsewhere and had been bedridden since then. He came with fixed flexion contractures in both knees and three deep bed sores. Dr Bhojraj advised starting his aggressive rehab. Dr Gaurish Kenkre and his team began with aggressive stretching to break the fixed flexion deformity. They worked on this boy, who till now had no hope of ever standing again, till he was back on his feet. He could achieve walking with the aid of splints and a walker.



Aman Sharma





*Neeraj with a HKAFO splint (above), and a AFO splint in the picture on right.*

## AN INCREDIBLE RECUPERATION FROM PARAPLEGIA

Neeraj Tiwari's life changed forever in 2018. An accident led to a fractured spine and spinal cord damage. The local hospital operated on him. Post the operation, his vital signs were stable but he had a complete loss of motor control in both his lower limbs along with sensory deprivation. His trunk balance was markedly impaired. Muscle strength was 0/5 on MMT grading for all muscle groups in the lower extremity. MMT is an acronym for Manual Muscle Testing that is used to determine the extent and degree of damage to a muscle. A normal person measures at Grade 5 on this test. Neeraj Tiwari scored zero on this test. This grade is given when the patient displays no visible movement or palpable muscle contraction. An active man in the prime of his life had been sentenced to a life as a paraplegic.

Owing to his financial situation the patient was shifted to VN Desai hospital for rehabilitation. The Spine Foundation's Rehab Team led by Dr Gaurish Kenkre took on the challenge. They carefully evaluated the patient's current status and devised a treatment plan whose prime focus was on functional independence. Could they make this nearly impossible journey from bed to shackle-free mobility? The patient's medical condition resulted in him being bed-bound. He had to rely on the



*Neeraj Tiwari returns to thank the Rehab Team. Seen here with Dr Gaurish Kenkre.*

mercy and assistance of his caregivers for his smallest needs. This completely demolished his self-worth and self-esteem. Neeraj along with the Rehab Team began the odyssey to unshackle the chains of dependency that imprisoned him. The road to recovery was a Marathon where consistency mattered more than speed. You could slow down but never stop. It demanded courage and determination. The rehab team set him daily goals, and Neeraj trained for trunk control and balance as diligently as any athlete. He underwent strength training for trunk and upper body muscles to enable him to lift his body with his hands. With it came the first milestone. Neeraj Tiwari could now sit independently and perform most activities of daily life by himself.

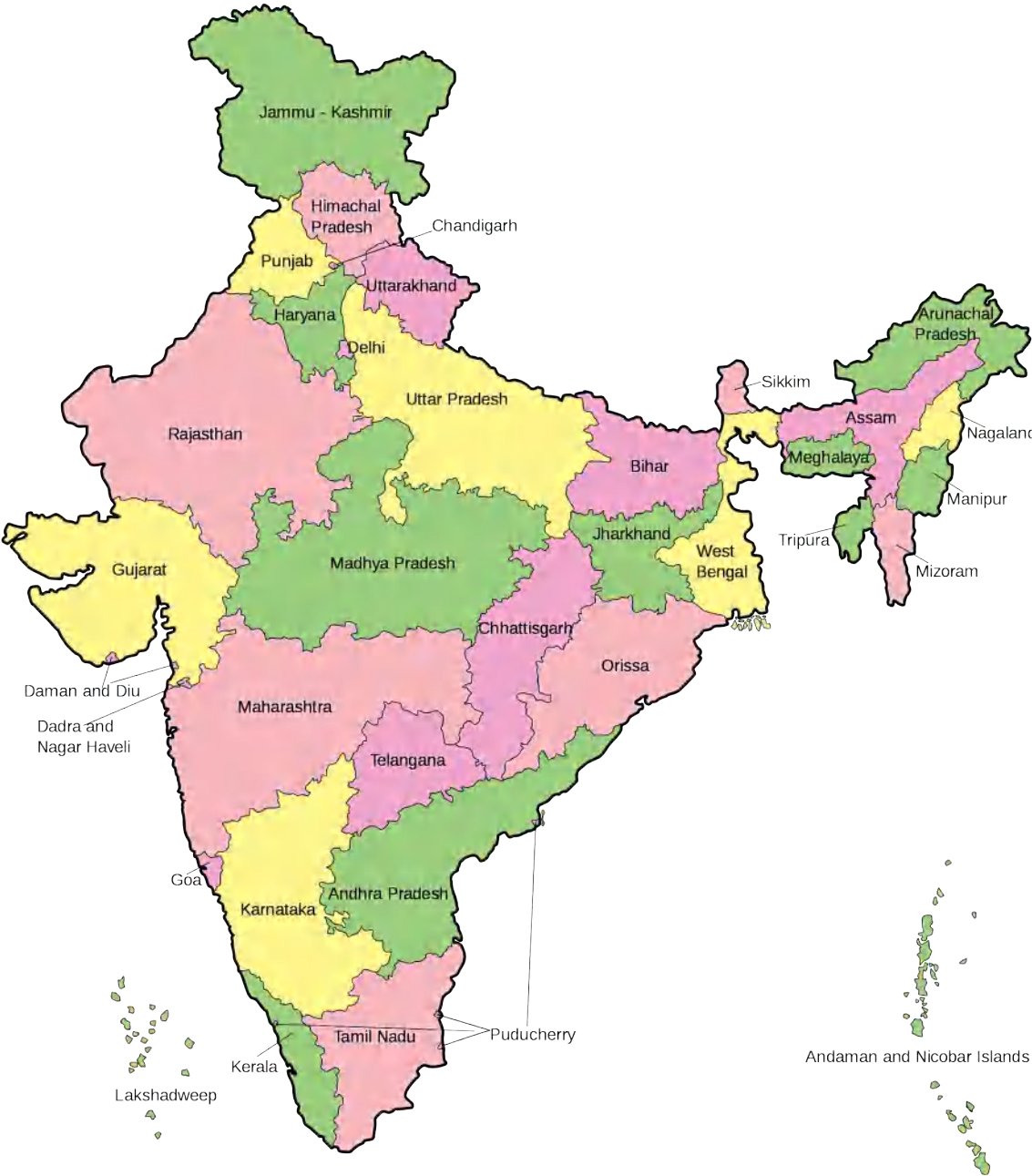
Yet, this was just the halfway mark. The next task for the rehab team was to help Neeraj achieve motor control in the muscles of the lower extremity with strength at 0/5. They put him through a rigorous training regimen using suspension, transfer boards, splints, currents and body mechanics. The first task was to enable him to stand independently. They did this through an HKAFO (hip-knee-ankle-foot-orthosis) splint to stabilise the hip and lower spine. After standing balance was achieved with HKAFO splints, ambulation training began. It was learning to walk again. Both Neeraj and Rehab Team fought each day and overcame each obstacle breaking down the dependence on splints each time. He graduated from using HKAFO to just KAFO and ultimately to just AFO. This was a remarkable recovery for the patient who was once completely bedridden, to require two people to help him walk with a Walker, to walking independently with splints till finally walking with minimal splints and support. The trunk hip and knee muscles upgraded from a strength score of 0/5 to 3/5. Being able to walk independently with minimal support and just an AFO gave back Neeraj his self-worth. He is now working towards achieving independence from any walking aid. Neeraj Tiwari and the Rehab Team had completed the arduous voyage from the shackles of dependency to that of maximal independence.

The Spine Foundation's Rehab Team through their prompt and professional support had given yet another person his self-worth and self-esteem back. Being poor should not mean having access to only poor-quality of treatment. As the Neeraj Tiwari and the foundation's Rehab Team demonstrated, courage is not having the strength to go on; it is going on when you don't have the strength.



# REACHING OUT TO THE RURAL POOR

Economic and geographic constraints mean a large number of people have no access to quality spine care. The Spine Foundation hopes to change that.



A truck is made into a makeshift ambulance. Patients in rural India have to sometimes travel hundreds of kilometres to access quality medical care.

Economic and geographic constraints mean a large number of people have no access to quality spine care across the 3.287 million square kilometres that make up India. For most of these people making a trip to Mumbai to access quality spine care is as impossible as a trip to the moon. That is why the Spine Foundation is in the process of setting up and expanding its Rural Spine Care Centres.

The work done by the Spine Foundation hasn't gone unnoticed. In June 2018, the Government of Maharashtra approached them and signed a Memorandum of Understanding with the Spine Foundation to replicate their Gadchiroli model throughout the state under the

Maharashtra University of Health Sciences.

The Spine Foundation is today working with medical colleges at Akola, Ambajogai, Aurangabad, Dhule, and DY Patil, Kolhapur. It is also setting up rural centres across India from Uttarakhand to Jharkhand to Tamil Nadu to Goa. Here is a quick look at some of these centres.

## GADCHIROLI

Gadchiroli, in some ways, can be called the spiritual home of the Spine Foundation. It was a partnership that was born in 2003 and has over the years gone from strength to strength. It was at Gadchiroli that the first rural spine surgery was done in 2007. In 2021, thanks

to the foundation's donors it acquired a new Siemens C-arm machine that is playing a big role in fixation cases as well as the pain clinics in Gadchiroli. This machine at SEARCH is the first in this area. The Spine Foundation has so far operated on nearly 300 patients here.

## AMBAJOGAI

This town in the Beed district of Maharashtra is home to Swami Ramanand Teerth Rural Medical College, the first rural medical college in Asia. This is the medical college where the foundation set up its first camp for patients in the region in January 2017. So far, they have treated 900 patients and performed 35 surgeries in Ambajogai.



One of the first patients to arrive was 20-year-old Baban. He was suffering from pain in his right leg for more than six months. It was so severe that it was affecting his daily activities, forget working on his farm. Economic backwardness and lack of proper medical counsel delayed the diagnosis and management. He was eventually diagnosed with a slipped disc and was advised of surgery.

The cost of the surgery had put his father into a dilemma. Which part of their agricultural land, the family's only source of livelihood, should be sold to raise money for Baban's treatment? Just when things were looking bleak for the family, the Spine Foundation's first OPD camp at GMC Ambajogai came to their rescue. Baban was amongst the first few patients to undergo a spine operation at GMC Ambajogai in its 40-year history. And that too at no cost. The surgery went off well and he went home happily, walking pain-free for the first time in the last eight months. Today he is back to his rigorous life in his field.

Baban is just one of the 94 surgery patients in Ambajogai who got a second chance in life thanks to this group of spine doctors. The Spine Foundation does not believe in helicoptering down to treat patients but in empowering the local health workers and medical professionals. In this pursuit, a state-of-the-art modular OT was donated to the Government Medical College & Hospital in Ambajogai in August 2021.

## DHULE

In a tribal district in North Maharashtra is the town of Dhule, on the proposed Delhi-Mumbai industrial corridor. The Spine Foundation collaborates with the



*Scientific temper meets faith. The opening of a camp is done after seeking divine blessings.*

Shri Bhausaheb Hire Government Medical College & Hospital to reach the people in the area. Since the first camp in September 2016, the Spine Foundation has operated on 24 patients.

As the doctors of the Spine Foundation discovered, surgery is the easy part. What is more difficult is to convince the patients to undergo the treatment. At

the first surgery camp in Dhule, four patients were operated on. Amongst them was Ratilal Ahire, a middle-aged farmer. Ratilal was suffering from what doctors diagnosed as "lumbar canal stenosis along with prolapsed intervertebral disc along with weakness in his legs". What it meant was that Ratilal could hardly walk for two minutes. He was the sole breadwinner of a family of eight people, and if he was incapacitated, his entire family would bear the brunt of his disability. He was advised surgery, but the fear and anxiety nearly had him packing his bags to go back home. It was only after Dr Bhojraj with his confident demeanour and calm mien stepped in to reassure the patient that Ratilal agreed to be operated on. Today he has recovered and continues to thank the team that gave him, and his family, their lives back.

## NANDURBAR

This tribal-dominated district came into being in July 1998 as Dhule was bifurcated into two districts – Dhule and Nandurbar. The Spine Foundation's first camp in Nadurbar was back in 2018. In October 2021, it conducted 10 complex spine surgeries in 12-hours at the Government Medical College and Hospital. This included one tandem, two cervical spines and one fixation. In the four years, the doctors have operated on 42 patients. Moreover, to empower local medical staff,



*The Spine Foundation's Dr Tushar Leone meets patients at a rural RSCC.*



*Radhakrishnan, at the centre, with other patients, post their surgery at Sittilingi.*

the foundation donated a state-of-the-art modular OT to the Civil Hospital in Nandurbar in February 2021. This was inaugurated by the District Collector Dr Rajendra Bharud.

## AURANGABAD

Did you know that Aurangabad was a part of the Hyderabad state till 1956? While the city is an industrial powerhouse it is also a gateway to the tourist hubs of Ajanta and Ellora caves. Since its first camp here at the Government Medical College in 2017, the foundation has treated 253 patients and carried out eight surgeries.

## AKOLA

This city in the Vidharba region of Maharashtra is also known as the cotton city. The Government Medical College & Hospital in Akola is the base of the Spine Foundation here. So far the Spine Foundation has performed 47 surgeries in Akola since its first camp here in 2017. This includes Scoliosis surgery, amongst the most high-risk and expensive surgery requiring high-end equipment and technology like neuro monitoring. You might ask if it's worth all the work, time and money being invested in it. So here is a true story.

During a Spine Foundation camp in Akola, Maharashtra

the doctors came upon a young woman, barely 20-years old with an infant she had given birth to just a week ago. She was emaciated and bed-ridden in a bed soiled by her urine and could barely breastfeed her baby. Suffering from spinal tuberculosis and other associated conditions, she had been deserted by her husband and left to her fate.



*It's not just the surgeons, but the whole team including other specialists, nurses, and ward assistants who complete the team.*

Since she was in a serious condition, the doctors operated on her the very next day and put her on anti-tuberculosis treatment. Though weak, she responded to the treatment and recovered well enough to be discharged from the hospital soon after.

Thereafter the doctors lost sight of her though records showed that she visited the cell for her anti-tuberculosis medicine and at another time she came to visit a paediatrician for the care of her child. About six months after the operation a young lady with a healthy child walked into the OPD for a follow-up. The doctors thought that she had walked into the wrong place since she looked perfectly healthy, till one of the doctors recognised her as the same woman that they had operated on a few months ago on an emergency basis. The Spine Foundation's intervention that day had saved not just one life, but two.

## KOLHAPUR

The Spine Foundation RSCC at Kolhapur is one of the more recent success stories. Established in collaboration with the DY Patil Medical College, set up the first camp in 2020. Since then, it has operated on 20 patients. However, the bond between them runs deeper than just conducting regular camps. The Spine Foundation regularly trains postgraduate residents from DY Patil at the VN Desai Hospital in Mumbai. Doctors from the foundation also regularly address medical students and healthcare professionals on various aspects of spine care.

## RATNAGIRI

The Spine Foundation first came to Ratnagiri in March



2017 and treated 101 patients on this visit. Four camps and six months later, the Spine Foundation doctors operated on 29 patients.

As of this moment, the Spine Foundation runs eight Rural Spine Care Centres in Maharashtra, including Gadchiroli. It is now spreading its wings across the country, but putting feet on the ground is a huge task. That is why it is working in collaboration with the Association of Spine Surgeons in India and the Association of Rural Surgeons in India to expand its reach nationwide.

### DHARAMPUR

Dharampur is a small and beautiful town situated east of Valsad on the banks of the Swargavahini River and is surrounded by the Western Ghats range on the east, west, and south. The Spine Foundation conducted its first camp here in 2019. In just over two years it has treated scores of patients and conducted 11 surgeries at camps held at the Shrimad Rajchandra Hospital.

### DEHRADUN

The Spine Foundation's first foray into the hilly state of Uttarakhand was in 2014. It has worked in different places like Nirmal Ashram Hospital, Parmarth Ashram, HIMS, and Hans Foundation Hospital at Satpuli. Thereafter in 2022, it joined hands with the Swami Vivekanand Charitable Hospital in Dehradun, to bring quality spine care to the pahadi people in this Himalayan region. The hospital, founded by Dr Anuj Singhal and Dr Tarashree Singhal, and run by the Swami Vivekananda Health Mission, has 11 satellite clinics in the interior Himalayas at Dharmawala, Dumet, Gangotri Dham, Haridwar, Kedarnath Dham, Petshal, Pipalkoti, Narayankoti, Barkot, Maneri and Badrinath Dham. This



*The Spine Foundation at the Swami Vivekanand Charitable Hospital in Dehradun.*



*The Spine Foundation travelled to Selvam's village to check his progress 2-years after surgery.*

gives the foundation a great opportunity to go deeper and reach out to patients staying in these difficult-to-reach places.

### SITTLINGI

Nestled in the foothills of the Kalrayan and Sitteri hill ranges, in Tamil Nadu, is Sittilingi, a tribal village with not more than two lakh people. This is a tribal area, cut off from modern amenities, that was caught up under the spell of quacks and black magic. In 1993, a doctor couple from Kerala came to Sittilingi, set up a 'thatched' hospital and started treating the sick with a few basic medicines. This was the beginning of the Tribal Health Initiative, a non-profit organisation that has since changed the socio-economic landscape of this tribal region in Tamil Nadu.

Tribal Health Initiative was founded by Dr Regi George



*The Spine Foundation holds regular online OPDs at Gadchiroli, Kolhapur, Sittilingi and Akola. More RSCCs are going online very soon.*

and Dr Lalitha Regi to provide quality healthcare at an affordable rate to the tribal population. Today it runs a health outreach program in 33 villages in the Sittilingi valley and the Kalrayan Hills.

Tribal Health Initiative views health as a state of mental, social and economic well-being, and not simply the absence of disease. Their health interventions go beyond merely providing curative and preventive medical services. They envisage farming (Sittilingi organic farmers association, SOFA) and craft (Porgai) initiatives as being directly connected to maintaining health and well-being in the communities they serve.

If the set-up seems familiar, it is. Spine Foundation has been working in a very similar set-up, again founded by a doctor couple, at Gadchiroli in Maharashtra. Therefore, when the Spine Foundation heard about the work being

done in this remote Tamil Nadu village, they did a feasibility study and initiated an association in 2017.

From a modest outpatient in that visit and a surgical camp in the next visit in early 2018, the comprehensive spine care services have achieved a strong foothold in the subsequent visits. The tribal population now has access to high-quality treatment of their spinal ailments right at their doorstep. No wonder, doctors of the Spine Foundation call Sittilingi their 'Gadchiroli of the South'. One of the success stories at Sittilingi is the story of a 45-year-old farmer, Radhakrishnan. He grows millets on his small farm and barely earns enough to keep body and soul together. He had developed a pain in his leg that refused to go away even when he sat or lay down. It gradually became impossible for him to walk more than a few metres. He was diagnosed with a huge prolapsed

disc, commonly called a slipped disc. The spine, which protects the nerves that come from the brain, is made up of many bones called vertebrae. And between each vertebra is a disc. The discs are made of strong, rubbery material which helps the spine be so flexible. When you have a prolapsed disc, what happens is that part of the inner softer component of the disc bulges out through a weakness in the outer part of the disc. The bulging disc often presses on a nerve root, which in turn can cause pain and other symptoms in the legs.

Radhakrishnan's prolapsed disc was too severe to be treated with only medicines or physical therapy. The doctors at the Spine Foundation recommended lumbar spine nerve decompression surgery. During the surgical camp at Sittilingi in September 2018, Radhakrishnan was operated upon. For the farmer, the result was nothing short of magical. The pain was gone and he could resume his daily normal activities almost immediately. The Spine Foundation had given Radhakrishnan a new lease of life.

There are many such people. The Spine Foundation doctors did a tandem (cervical and lumbar) surgery on the septuagenarian Selvam Ramaswamy in 2019. In 2022, Dr Shekhar Bhojraj and the team travelled to his village to check on his health. They found the 80-year-old completely recovered and going about his daily activities without any trace of his old affliction. This was a heartening sight for the entire team and proof of what they do makes a difference.

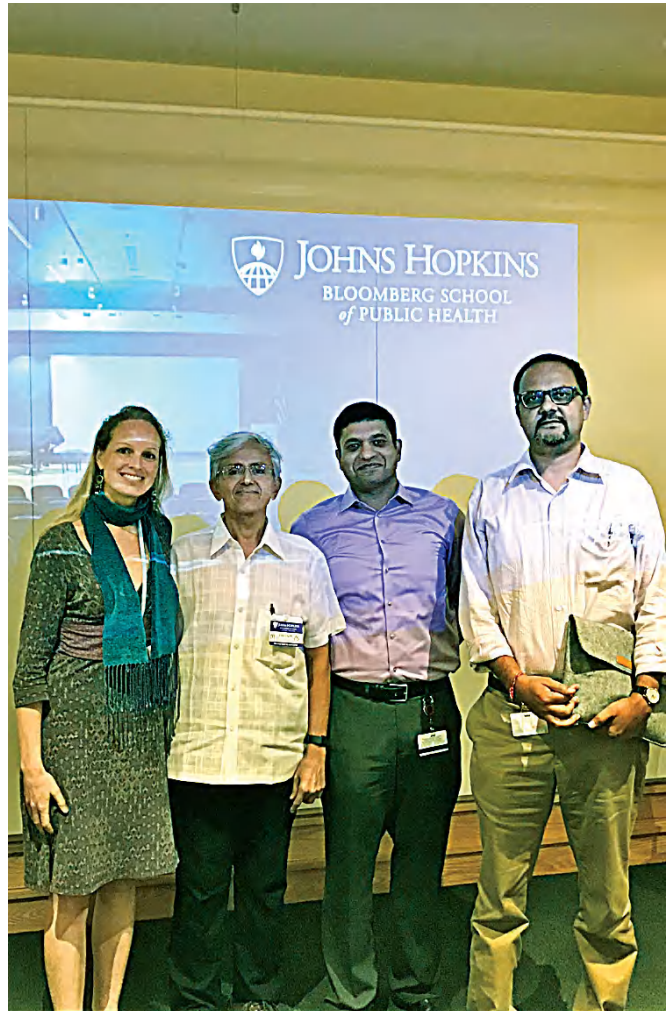
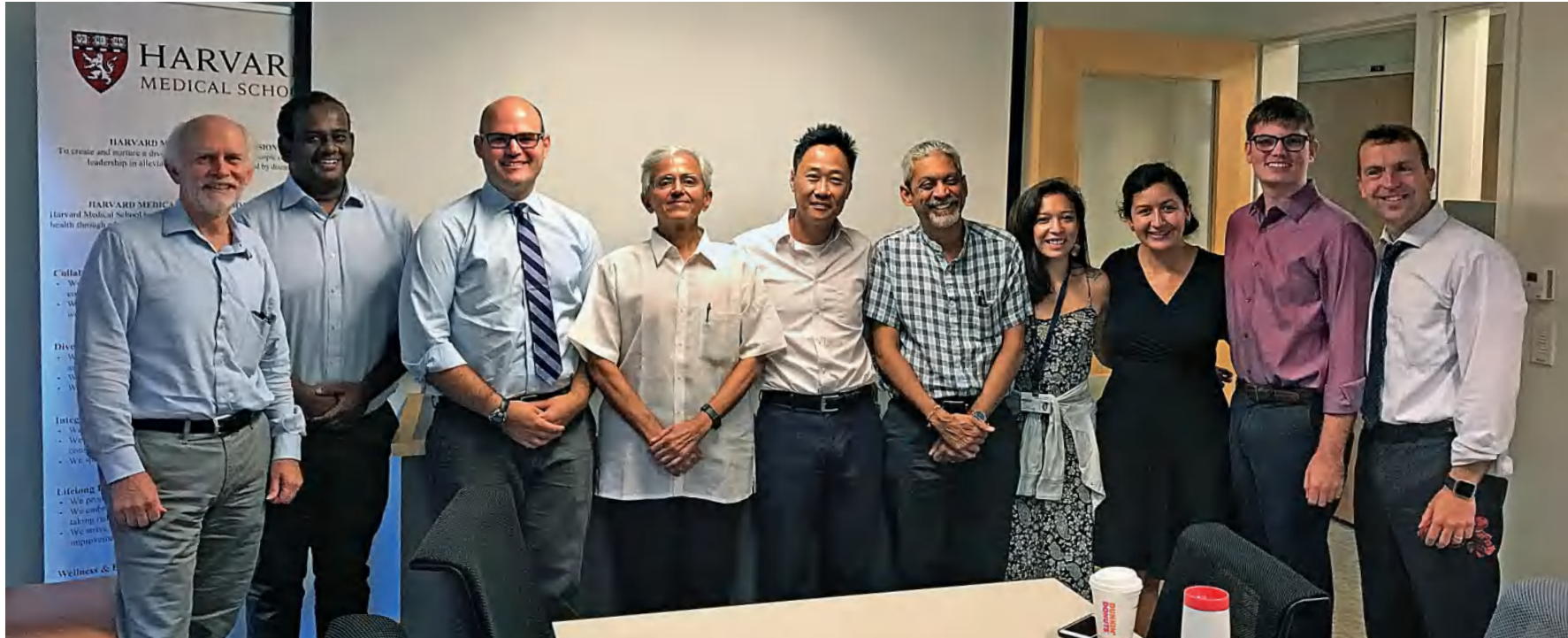
### TURNING A PROBLEM INTO AN OPPORTUNITY: SPINE CARE ONLINE

The Spine Foundation's work was interrupted by the pandemic that hit us in 2020. With travel restrictions and social distancing norms in place, it was nearly impossible to organize any camp, but if there's a will there's a way. On Christmas Day 2020, the Spine

Foundation held its first online clinic. A team of doctors from the Spine Foundation saw patients red-flagged by the doctors at SEARCH in Gadchiroli. The success of this online consultation has now been regularised with doctors at SEARCH and the Spine Foundation holding online clinics every Friday between 2 pm - 4 pm.

After the first online OPD held at Gadchiroli, the initiative has gained momentum. While this was the result of the travel curbs during the pandemic, it has turned out to be a powerful tool for The Spine Foundation to reach out to more people who need its services. The Spine Foundation has now expanded its online clinics to Kolhapur, Sittilingi and Akola. Even in non-pandemic times, the online OPDs have become a powerful, cost-effective and time-efficient tool for doctors to reach out and serve more people in far-flung places.





# THE FUTURE, THE SPINE FOUNDATION WAY

The Spine Foundation is on a mission to spread the message of quality healthcare across all 29 states of India, and the world.

The Spine Foundation is a unique experiment to reach out to the rural population and set up viable centres offering quality care at the grassroots level. Unlike others, the Spine Foundation isn't just a not-for-profit organisation but actually pays for the cost of treatment from its own pocket. And the Foundation's mission is not just limited to treatment or surgery but to create a new movement in affordable public health.

### MORE THAN JUST SURGERY

The Foundation is trying to offset its initial costs through funding agencies to start with, but eventually making it self-sustainable by linking it to existing government funding and public insurance schemes that are not reaching the grassroots. Big corporate houses and industries with sizeable CSR budgets are another possible source of funding that the Foundation is actively pursuing. The Spine Foundation has been working in the field for the past 20 years, but the journey has just begun. The next step is to set up more Rural Spine Care Centres across all the 27 states of India. Not just randomly set up a centre but develop standardised protocols and algorithms for starting a new centre. And after setting it up, critically evaluate and study their functioning to identify the deciding factors for poor or excellent results. Findings that can be shared to learn and fine-tune other centres. The Spine Foundation is also working towards setting up a hands-on training centre at VN Desai Hospital in Mumbai to develop the clinical and surgical skills in the team and the new recruits.

Spine Foundation has teamed up with Narsee Monjee

Institute of Management Studies (NMIMS) to develop financial models and IT systems for data management, design campaigns to promote the Foundation's work, and implement projects on financial management and healthcare economics.

### CENTRE FOR COMPREHENSIVE SPINE AND MUSCULOSKELETAL CARE FOR RURAL INDIA

The Centre for Comprehensive Spine And Musculoskeletal Care at Gadchiroli will bring quality and complete spine care to the tribal areas of Eastern Maharashtra. It is a joint initiative of The Spine Foundation, Rehab Team of India and SEARCH Gadchiroli.

The initiative was started in March 2020. This was a fruition of a vision, of free and quality rehabilitation care, that is accessible to the poor. It adopts a holistic approach where the patient has access to diagnostics, consultation and treatment under one roof. It is equipped with machines like Therapeutic Ultrasound to alleviate pain, IFT, TENS, and muscle stimulator equipment like therabands, weights, dumbbells, gym balls, form rollers, stability trainer, core muscle tester etc. The Centre is staffed by experienced doctors, nurses and physiotherapists. The OPD is equipped with the latest instruments for diagnosis and treatment, and the best possible resources are made available. The hospital has a Spine OPD and Physio OPD that caters to all possible ailments from neck to shoulder to wrist to back to hip to ankle. An online OPD gives patients in remote parts access to expert professionals in case of serious cases. A triage system ensures that all receive



treatment and the ones that need special care also get help in time. This prevents wastage of resources and better handling of the patients' ailments.

The Centre for Comprehensive Spine And Musculoskeletal Care at Gadchiroli is developing training material for different audiences such as physiotherapy training modules, Community Health Worker training material etc. The centre is also responsible for coordination, implementation and monitoring of the field programmes including training of Community Health Workers. The centre is establishing partnerships with public health institutes and global surgery initiatives with Masters of Public Health students. All the data and statistics generated at a centre like this need to be channelised into learning. Therefore all documents are being audited and converted into articles. Finally, the centre will organise various training and knowledge dissemination workshops.

A comprehensive marketing and communication



plan has been implemented to drive publicity and awareness of the work being done at Gadchiroli. Rather than profit, this initiative is to inspire others to join in and contribute to making this world a better place.

#### THE THINK TANK

The Spine Foundation is working with various academics, institutions, experts, NGOs, the government, administrators and doctors to create a think tank to push innovation, build network and communities to nurture and spread the idea of affordable spine care for all. This think tank meets every month to bring together the finest minds and experts across

various disciplines to strategise in making the Spine Foundation more effective and advocate the idea of affordable healthcare.

#### REVERSE INNOVATION IN HEALTHCARE

While the immediate objective of the Spine Foundation is to bring spine care to the poor wherever they are

in India, the larger objective is to spread this message across the world so that nobody has to suffer anymore. The research and learnings of the Foundation can be replicated in any developing economy. Can this innovation be replicated across the world? Vijay Govindarajan and Ravi Ramamurthy in their book 'Reverse Innovation in Healthcare' have noted that the locus of innovation in the global economy is changing, and so are patterns of dissemination. Poor countries no longer just borrow innovations from developed countries. They also contribute innovations to the rest of the world, including the developed countries. We call this transfer of new ideas and innovations from poor regions to the rich "reverse innovation".

The authors further state that innovations arising in poor countries typically involve practices that maximise value (the ratio of benefits to price), by making products extremely affordable and easy to use, while also keeping quality high. Although these innovations arise from conditions of poverty and scarcity, they can address needs in conditions of wealth and abundance perfectly well.

Experts have noted that the ideas in Reverse Innovation in Healthcare could save American healthcare billions of dollars. Could innovations designed in India work for America too? The two worlds couldn't be more different. While patients in America are mostly insured and do



Spine Foundation believes in quality healthcare for all.



In the absence of sophisticated equipment, the physiotherapists at Spine Foundation innovate with everyday objects to get the same results.

not worry about cost, poor patients in India have to bear the cost of treatment themselves and are therefore very price conscious. In the United States, there is an excess capacity of beds and equipment that comes with a high fixed cost. On the other hand, in India, there is a severe capacity shortage. Healthcare in USA is highly regulated, including fee-for-service reimbursement, and is encumbered by legacy. Unlike the USA, healthcare in India is a largely unregulated industry, resulting in value-

based competition and a relatively clean slate as far as legacies go.

During a recent visit to USA, Dr Bhojraj shared the work done by the Foundation at three prestigious American institutes – University of Wisconsin at Madison, University of Johns Hopkins at Baltimore and University of Harvard at Boston. The Spine Foundation's model of affordable specialised healthcare has created keen interest in these institutes, who

have offered to collaborate with the Foundation to develop the program through various means. These include training modules for Spine Foundation Fellows, internship for students doing Masters in Public Health based on the Spine Foundation model, webinars at Johns Hopkins with live interactive sessions and assistance in developing management, financial and outcome analysis models.

The Spine Foundation has lit a beacon of hope for not just the poor in India, but across the world.







# FACES BEHIND THE SPINE FOUNDATION

Trustees and Fellows of the Spine Foundation

## DR SHEKHAR BHOJRAJ



DR SHEKHAR BHOJRAJ is the first dedicated specialised spine surgeon in India. He was the first doctor and surgeon in India who decided to dedicate himself to spine care, and in the process gave birth to the super-speciality that doctors since have followed and practised.

A product of Mumbai's KEM Medical College, he practised here as an orthopedic surgeon. His increasing interest in the growing field of spine care made him travel across the world to learn about it. Eventually he decided to focus on the spine and set up India's first specialised spine unit at KEM Hospital. This municipal hospital thus became the first in India to bring this super-speciality to the people. Though the spine unit at KEM was doing excellent work, there was a resource crunch as it was financed by the government.

When an offer came from the Hinduja Hospital to set up a spine care unit, Dr Bhojraj thought it was an excellent opportunity to access more money for spine research since this was a private organisation. Hinduja became the first private hospital to offer this super-speciality in India. Coming from a Gandhian background, Dr Bhojraj was not happy catering only to the rich and privileged. There was a sense of achievement in caring for the less-fortunate and less-privileged patients who came to public hospitals like KEM. It was this restlessness that eventually culminated in the establishment of the Spine Foundation. Dr Shekhar Bhojraj along with his wife Dr Shilpa Bhojraj are the founders of the Spine Foundation.

Dr Bhojraj is not just a practising surgeon but also a mentor to many doctors who are some of the most reputed spine surgeons today. Perhaps the most important lesson that Dr Bhojraj instilled in them is that you cannot be a good doctor without being a good person. Perhaps that is the reason that nearly everyone who has trained under him has signed in on his dream of making quality healthcare affordable for everyone. And continue to invest their time and money in the cause.

Everyone knows the scientific and social face of Dr Bhojraj, but there is an artistic side to him that few know about. All through his medical studies, Dr Bhojraj found much pleasure in contributing his drawings to the college journal. Thankfully he did not abandon his medical studies to pursue his artistic interests. Today he continues to draw and also expresses himself by capturing images with his cellphone camera. And then gives the images a twist with his captions. You can check out his Instagram account to see his art.



# DR SHILPA BHOJRAJ



SHILPA JANAK MEHTA was born in a traditional Gujarati family to Dr Kusum Mehta, a general practitioner from a rich business family, and Dr Janak Mehta, a distinguished anaesthetist from a middle-class Gandhian family. She thus grew up with an ideal combination of strong core values of life and an inherent business sense.

As the only child of two busy doctors, she became independent, studious and self-confident at an early age and explored a wide range of interests in art, dance, music and academics. She continues to learn and enjoy the sitar and is a keen student of the Sanskrit language, among other interests.

She was very close to her aunt, the late Dr Usha Mehta, (lovingly called Phoiba), a national freedom fighter and Gandhian. Her love, affection and ideals had a strong influence on young Shilpa.

An extremely hardworking and sincere student, Shilpa completed her undergraduate medical studies and an MD in Anaesthesia at the prestigious Seth GS Medical College and KEM Hospital in Mumbai. She decided to focus on anaesthesia in cardiac surgery and has been a highly competent cardiac anaesthetist to many leading cardiac surgeons in Mumbai such as the late Dr KN Dastur, Dr Bhattacharya and Dr Ramakant Panda.

During her journey at Seth GS Medical College, she met her future life partner, Dr Shekhar Bhojraj. She manages to successfully balance her professional and family commitments, having raised two beautiful children; daughter Pooja, following in her footsteps as an anaesthetist, and son Tejas, who has inherited his mother's love for music and is also learning the sarod while pursuing a PhD in Mathematics.

In addition to their professional careers and private practice in anaesthesia and spine surgery respectively, Dr Shilpa and Shekhar Bhojraj found a common ground in the exciting field of Social Medicine. Together, they established the Spine Foundation in 1998, intended to serve the spinal care needs of the poor.

As one of the co-founder trustees along with Dr Shekhar Bhojraj, Shilpa has been a pillar of strength for the Spine Foundation right from the start, initiating and setting up spine surgery camps at all rural centres and helping to run them until they could be taken over by local anaesthetists.

With 20 years of Foundation work behind her, she continues to inject life (and anaesthetics) into new spine camps in the remotest rural areas of our country. Dr Shilpa Bhojraj is truly a spine of the Spine Foundation.

# DR ABHAY NENE



DR ABHAY NENE, an alumnus of TN Medical College, graduated as a medical doctor in 1995, and later completed his post-graduate training in Orthopaedic Surgery in 1998 from Mumbai University. His main training in the sub-speciality of Spine Surgery was in Mumbai with the Spine Foundation, with Dr Bhojraj as the chief mentor, since 1999. He also visited multiple centres across the world including Singapore, USA, UK and Germany, and was awarded multiple international fellowships during his days as a spine trainee.

He currently practices as a Spine Surgeon attached to various corporate hospitals in Mumbai. His areas of special interest are paediatric spinal deformity, spinal tumour reconstruction, tuberculosis and the osteoporotic spine. He has been an author to over three dozen international publications and textbook chapters, is actively involved in research and also runs fellowships to train young spine surgeons. He is a keen academician and is currently the India Chair of the AO Spine International, one of the world's leading academic organisations.

Dr Nene was awarded the 'Asia Pacific Educator of the Year 2017-18' by the AO Spine International board.

If you have a pre-conceived notion of what a spine surgeon should be, take a look at what Dr Nene does when he takes off his doctor hat. He is a fitness freak who will run, trek and cycle to push himself. Dr Nene is a regular half-marathon runner. He has completed over 20 half marathons not just in India but all over the world. Dr Abhay Nene is an avid cyclist who has cycled some of the world's toughest routes. That includes Manali to Leh, reaching 17500 feet, over six of the toughest Himalayan passes. He has completed the Tour of the Nilgiris, India's longest cycle race of over 1000km. Not only did he complete it, he was amongst the top-30 finishers in August 2014. Then there is the 60-hour non-stop relay cycle ride from New Delhi to Mumbai, that raised Rs 2.5 Crore for cancer children. It's not over yet. He partook in the Iceland Circumnavigation cycle race in 2018.

Dr Nene is also an avid trekker, having scaled the Everest Base Camp, summited India's highest trekkable peak, Stok Kangri, at 20,000 feet, as well as the Goech-la pass at the base of the Kanchenjunga.

Plus Dr Nene is a musician who loves to jam up with his private group of friends and make music together.

Through this all, Dr Abhay Nene continues to find and give a substantial amount of his time to the work of the Spine Foundation. Treating the children at Wadia Hospital is on top of Dr Nene's list.



# DR SHEETAL MOHITE



DR SHEETAL BHUJANG MOHITE completed his basic medical education at Bharati Vidyapeeth Medical College, Pune University, in 1995. It just happened that his best friend in school wanted to pursue medicine, so he too threw his hat in the ring. Some people warned him that medicine took long years of study but that was okay with him. His parents were supportive to whatever he wanted to do in life, whether he wanted to be a doctor or a dancer. After his internship, he chose to pursue orthopaedics. He did his Diploma in Orthopaedics at Pravara Rural Medical College, Loni, Pune University, in 1998. He also is a Diplomate of National Board, New Delhi in the field of Orthopaedics in 1999.

It was later during his stay in Mumbai that he developed an interest in spine surgery. Working at Hinduja Hospital under Dr Aggarwala, he was exposed to trauma, joint replacement and spine. It was there that he met Dr Shekhar Bhojraj, Senior Spine Surgeon, at Hinduja Hospital, Mumbai. Dr Bhojraj's approach floored him. Dr Bhojraj was more than a medical practitioner and teacher. The way he took people along with him and built the team was unparalleled. Dr Mohite underwent training in spine surgery under the guidance of Dr Bhojraj as a Spine Foundation Fellow and as an Associate Spine Surgeon.

Dr Mohite also has some spine training fellowships at Robert Jones and Agnes Hunt Hospital, Oswestry and at University Hospital, Cardiff, and also at Stanmore in the United Kingdom. He also trained at the Advanced Trauma Centre, Leipzig, Germany. He was chosen for the Global Outreach Fellowship program for Scoliosis Research Society meeting in Miami in USA in 2005. Under the auspices of Dr Richard Fessler, he also had an exposure to Minimally Invasive Spine Surgery at Rush Medical Center, Chicago, USA.

He presently is Consultant Spine Surgeon at Shushrusha Citizens' Cooperative Hospital (Dadar and Vikhroli), Mangal Anand Hospital, Chembur and at SL Raheja - A Fortis Associate Hospital at Mahim in Mumbai.

It was his training under Dr Bhojraj that exposed him to what would become a driving force in his life, help those who cannot help themselves. Today, as a trustee of the Spine Foundation, one of the challenges he sees is the phobia that comes with the idea of spine surgery. People run away from the camps in fear of surgery. Dr Mohite believes that the only way to build confidence and goodwill is through successful surgeries. He also believes that there will come a day when the Spine Foundation will be there wherever there is a patient in need.

# DR RAGHUPRASAD VARMA



DR RAGHUPRASAD VARMA completed his basic medical education at the Grant Medical College in Mumbai. Thereafter he did his MS in Orthopaedics at the Bombay Hospital, Mumbai. He also is a Diplomate of National Board, New Delhi in the field of Orthopaedics in 2001.

Thereafter his interest in spine surgery led him to pursue it as a super-speciality since 2001. He worked as a spine fellow and later as an associate spine surgeon at the Spine Clinic at Hinduja Hospital, Mumbai under the guidance of Dr Shekhar Bhojraj.

Dr Varma has had multiple fellowships for advanced spine training at Robert Jones and Agnes Hunt Hospital (Oswestry ), University Hospital (Cardiff) and Stanmore in the UK, and Advanced Trauma Centre, Leipzig, Germany. He has also worked in the department of Spine at the National University Hospital, Singapore.

Dr Varma was selected for the Global Outreach Fellowship for the Scoliosis Research Society meeting in Miami, USA in 2005. He is trained in minimally invasive spine surgery at the RUSH Medical Centre, Chicago, USA under the auspices of Dr Richard Fessler.

Dr Varma is a reviewer for the British Journal of Bone and Joint Surgery, and has many publications and podium presentations to his credit. He is a delegate council member of the Indian chapter of AO Spine Asia Pacific and is faculty at many of its outreach programs. Dr Varma is a visiting spine surgeon at the Victoria Hospital, Seychelles and has conducted spine surgery camps under the auspices of Ministry of Health, Seychelles.

Dr Raghuprasad Varma is a consultant spine surgeon at reputed premier hospitals in Mumbai including Dr LH Hiranandani Hospital, Fortis Hospitals, Apollo Hospital and Reliance Hospital.

Dr Varma is an honorary spine surgeon at the Mathadi Trust Hospital, Navi Mumbai. He has performed around 6000 spine surgeries of various aetiologies including degenerative spinal disorders, adult and paediatric (scoliosis and kyphosis) spinal deformities, spinal infections and tumours.

He is also an honorary spine surgeon at the Sudheendra Medical Trust Mission hospital in Kochi, Kerala.

Spine healthcare services with adult and paediatric spine reconstructions are his special interests. Dr Varma is an ardent student of Hindustani classical music and also enjoys swimming and cycling.



# DR PREMIK NAGAD



DRPREMIK NAGAD left his parents’ house when he was little more than a toddler, and has yet to return home. He was enrolled into a residential school at a very early age, in junior kindergarten. Throughout his educational life he has been a residential student, and that has made him extremely independent and self-reliant.

Unlike most who choose to follow a profession, Dr Nagad believes that the profession chose him. A routine examination got him a seat at a medical college and Dr Nagad did his basic medical education and diploma in Orthopaedics in Bijapur, Karnataka at Shri BM Patil Medical. After his diploma in orthopaedics, he earned his Diplomate of National Board in Orthopaedics at Pushpagiri Institute of Medical Sciences in Thiruvalla, Kerala. In 2008, he joined Dr Abhay Nene as an observer and gradually became a clinical fellow and eventually an associate spine surgeon whose job responsibilities included co-ordinating surgeries as well as fellowships. In his stint with Dr Nene, he learnt more than medicine; he learnt empathy and social responsibility. In 2012, Dr Premik Nagad joined Dr Bhojraj as an associate and coordinator of Spine Foundation fellowships. By 2015, Dr Nagad became an independent consultant spine surgeon at Wockhardt Hospital and a year later at Lilavati Hospital in Mumbai. He is a consultant at Breach Candy Trust Hospital and has also done fellowships at Brazos Spine, Texas and Rush Institute, Chicago. Currently he is a trustee of the Spine Foundation, and other than his professional commitments in Mumbai, he also co-ordinates the fellowship program and the Regional Spine Care Centres all over Maharashtra and India for reaching out to the underserved population for spine care. Dr Premik Nagad has a dream of seeing the Spine Foundation spread across the country and world, bringing relief to each and every one.

Dr Nagad is also a foodie. Though he thinks his mother’s cooking is best, he makes it a point to try out the local cuisine whenever he is travelling. Rather than dining at the Taj in Mumbai, he loves to eat at his favourite Bagdadi in the Taj’s shadow.

While Dr Nagad is a foodie, he burns the fat through cycling. In fact, a lot of doctors at the Spine Foundation stay fit through cycling and make it a point to go for a cycling holiday together every year. And thanks to cycling, Dr Nagad is today 30 kilos fitter and healthier.

# DR PRIYANK PATEL



DESIGNER, ADVENTURE SPORTS enthusiast, physician, surgeon, entrepreneur, social worker; seems like a panel of five different people but in truth is one individual who has donned different roles at various phases of his life. One would imagine him to be an old, bespectacled man with a hunch, living a retired life somewhere in the mountains after achieving so many titles. On the contrary, he has only managed to complete a third of his life. He leads a team of future physicians, changing the landscape of how medicine is preached, practised, and perceived. Here’s introducing Dr Priyank Patel. He is a 33-year-old dynamic physician specialising in surgical and non-surgical management of spine-related disorders with sub-speciality in spine tumours.

Dr Patel has done his fellowship at Dr Shekhar Bhojraj’s Spine Foundation. He also has extensive international training from coveted spine institutions in complex surgical procedures like minimally invasive spinal surgery, computer-assisted spinal surgery, microsurgery, athletic spinal injuries and motion-preserving procedures, including artificial disc replacement.

Although surgery is his expertise, Dr Patel strongly believes in a conservative approach to manage spine disorders wherever possible or required. He is a firm advocate of an active lifestyle with corrective exercise, strength and conditioning coaching for issues where surgeries should not be the primary line of treatment. Dr Patel has treated professional athletes from the Indian National Cricket Team as well as people from the film industry and enabled them to perform at their peak form in spite of injuries. His command over his subject and skilled surgical expertise has made him a favourite in the international circuit. He has been invited for talks and presentations at World Congressional Meets on spine and related disorders and is recognised as a senior consultant by various national and international spine organisations.

In addition to his role as a surgeon and consultant, Dr Patel is part of the Spine Foundation that is involved in nurturing new surgeons; doing philanthropic work by setting up Rural Spine Care Centres across India especially for the tribal society. His future vision is to establish a National Spine Tumour Foundation to specifically address cases related to spine tumours, which is his core area of interest and is a much required step for the betterment of the country’s health landscape.



# SPINE FOUNDATION FELLOWS

<b>DR NITIN SHETTY</b> (1999 - 2000)	<b>DR PRIYANK PATEL</b> (2012 - 2016)
<b>DR ABHAY NENE</b> (2000 - 2002)	<b>DR AADITYA KASHIKAR</b> (2013 - 2016)
<b>DR RAGHUPRASAD VARMA</b> (2001 - 2005)	<b>DR NISHANT KUMAR</b> (2013 - 2015)
<b>DR SHEETAL MOHITE</b> (2001 - 2007)	<b>DR HRUSHIKESH MEHATA</b> (2014 - 2016)
<b>DR SHAILESH HADGAONKAR</b> (2005 - 2008)	<b>DR KUTBUDDIN AKBARY</b> (2014 - 2016)
<b>DR SIDDHARTH BADVE</b> (2006 - 2010)	<b>DR AKSHAY GADIA</b> (2016 - 2017)
<b>DR SAMEER KALKOTWAR</b> (2006 - 2010)	<b>DR MANDAR BORDE</b> (2016 - 2018)
<b>DR ANKUR GUPTA</b> (2007 - 2008)	<b>DR TANAY PRABHOO</b> (2016 - 2018)
<b>DR GAUTAM PRASAD</b> (2008 - 2013)	<b>DR GOWTHAMAN KAMARAJ</b> (2017 - 2019)
<b>DR PRASAD KARPE</b> (2008 - 2009)	<b>DR JAYESH BHANUSHALI</b> (2017 - 2019)
<b>DR TARAK PATEL</b> (2009 - 2011)	<b>DR SUMAN DHAR</b> (2018 - 2020)
<b>DR TUSHAR DEORE</b> (2009 - 2011)	<b>DR ALOK JAIN</b> (2018 - 2020)
<b>DR AKSHAY JAIN</b> (2010 - 2012)	<b>DR GAJENDRA PAWAL</b> (2019-2021)
<b>DR TARUSH RUSTAGI</b> (2011 - 2013)	<b>DR TEJASVI AGARWAL</b> (2020-2022)
<b>DR BHARAT SARKAR</b> (2011 - 2012)	<b>DR HARIKRISHNAN A</b> (2020-2021)
<b>DR ISMAIL SHAIK</b> (2012 - 2014)	<b>DR HARSHIT DAVE</b> (2021-2023)
<b>DR PREMIK NAGAD</b> (2012 - Present)	<b>DR SHIVA KUMAR</b> (2022-2024)

# BE A PART OF THE DREAM

The Spine Foundation needs your support. Here is how you can help.

The road in front of the Spine Foundation is long, the journey is filled with challenges and the destination is always over the horizon. If you would like to be a part of this adventure, there are many ways you can help our team, with a shared dream. So how can you contribute?

Contribute in funding: Money is always important, but what's more important to us is that every rupee of yours is used for the purpose it is meant for. The Spine Foundation is run by senior doctors at the top of their game, who put in their own money, time and expertise. The task, though, is too big for even a team of top doctors, so we make sure that every rupee we get goes a long way. There are many ways you can choose to fund us:

- Fund the entire running cost of a Rural Spine Care Centre
- Fund equipment and surgery instruments
- Sponsor surgeries, or even a single surgery
- Fund critical investigations like MRIs
- Fund medications and rehabilitation

Contribute your time: If you can't contribute with money, contribute with something even more valuable – your time. You can volunteer at any of our camps. We need feet on the ground, we need people who care and we need souls with their heart on fire.

Contribute your expertise: We don't need just doctors to make our dreams come true. We also need people with various skills. Whatever your skills or speciality, if you think that you can contribute to get us closer to our dream, welcome aboard.

Any other way that excites you: We are open to anyone, and everyone, who wants to be a part of this journey, this movement, this dream. Get in touch with us and let's see what we can achieve together.

If you want to contribute to the Spine Foundation, write to us at [thespinefoundation365@gmail.com](mailto:thespinefoundation365@gmail.com). Or contact us on +91 9819826244/9892101234. Visit our website: [www.spinefoundation.org.in](http://www.spinefoundation.org.in)



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