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Royal Care

- **Editor & Publisher**

Dr. K. Madeswaran

Chairman - Consultant Neuro & Spine Surgeon

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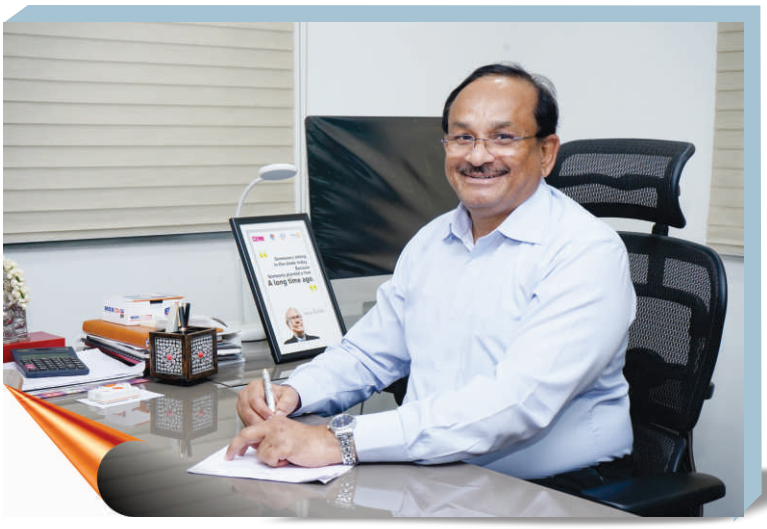
CHAIRMAN'S COLUMN



Warm greetings to all

We are going to celebrate our 5th anniversary on 13th November and I take this opportunity to thank our patients, well-wishers, shareholders and our entire royal workforce for their phenomenal support and patronage.

Technology-driven innovation holds the potential to improve our understanding of patients, enable the delivery of more convenient, individualized care. We continue to invest in technology focussed healthcare. One such recent addition to our institution is the world's first artificial intelligence-enabled next-generation CT scanner which delivers a whole new level of patient comfort, fantastic image quality for more accurate diagnosis with the lowest radiation dose possible. More such innovative technologies in healthcare are planned for installation in the near future.

Covid-19 vaccines provide highly effective and probably long-lasting protection against severe disease; but protection against infection is imperfect and might wane over a period. The recent rise in cases in china and Europe indicates this. Timely vaccination and covid appropriate behaviour have to be followed to overcome this pandemic.

Stay safe and alert

Regards

Dr. K. Madeswaran

Founder Chairman

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From The EDITOR'S DESK

"An ounce of prevention is worth a pound of cure "...

Ben Franklin

The National vaccination drive is going on in full swing with our hospital starting the SPUTNIK vaccine as the first in the city for the general public and we were the only hospital for some time with all three vaccines (Covaxin, Covishield & Sputnik) available under one roof.

We congratulate **Dr. Murugananth** on his book release – **"SECRETS TO A HEALTHY KIDNEY"** which shall help non-medical people understand the kidney better.

We also congratulate **Dr. M.N.Sivakumar,** for being elected as the zonal member- south, to the executive committee of the Indian society of critical care medicine.

"Painless Dentistry" is a welcome sign for many patients who constantly fear visiting a dentist. We are amongst the few super-speciality hospitals to incorporate this facility. Health care awareness lectures were delivered by our doctors in our hospital premises for the benefit of employees. Multiple vaccination programs were also conducted in various areas by the hospital in concordance with the government and it was greeted by the public with high regards.

In this edition, we have an interesting write up on plastic surgery, maxillo - facial and neurosurgery. We welcome the new consultants who have joined Royal care Hospital and wish them success in their endeavours.

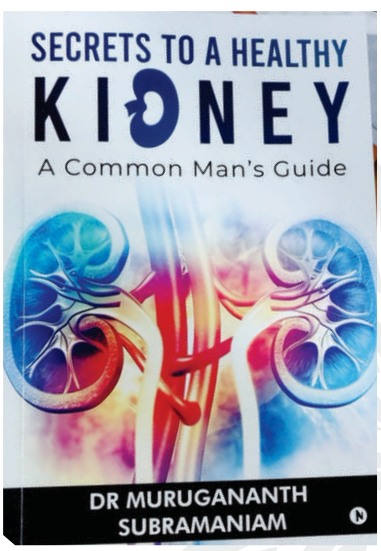
A book on "SECRETS TO A HEALTHY KIDNEY" Launched by Dr.K.Madeswaran Chairman Author: Dr.S.Murugananth Consultant Nephrologist.

Dr. S. Murugananth
MD, DM (Nephro).,
Consultant Nephrologist

Kidney disease can strike anyone at any point in time and is rising in number primarily due to the increase in other chronic diseases. This book is for anyone concerned about the well-being of the kidneys. Individuals at risk of kidney diseases including diabetes, hypertension and heart disease patients as well aspatients of all stages of kidney failure will find this book very useful.

Secrets to a Healthy Kidney explains in simple terms,

- Common diseases of kidneys which would potentially culminate in kidney failure
- Understanding kidney failure
- Practical tips to postpone and avoid dialysis
- Various treatment options A segment on diet - A real game changer in kidney disease
- Real-life examples for easy understanding
- Inspirational patient stories
- Effective strategies for prevention of Kidney diseases



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Advanced NEUROMUSCULAR Therapy Protocol

For Vertical Spinal Instability / Degenerative disc disease of spine

Dr. K. Raguraja Prakash
MRCS, DNB(Surg), FMAS, CNMT(USA), M.Ch(Neuro).,
Consultant Neuro Surgeon

Abstract

Vertical spinal instability and ensuing degenerative disc disease of the spine, the pathological entity that persuades everyone in their lifestyle, irrespective of all treatment standards. Our lifestyle against gravity, accumulates stress and strain signals all over the spine. The mechanotransduction and Mechanocoupling process converts these strain signals to osteophytes and traction spur at the level of Vertebral bodies. At the facetal level, deformation, translation, and hypertrophy of facets can occur. Concerning muscles, changes such as muscle fibrosis, shortening, fatty infiltration results in neuromuscular incoordination. The Intervertebral disc, as a shock absorber, receives all signals and undergoes degeneration. All the above said pathological changes occur as a measure to correct the instability as a whole. The entire spine may undergo degeneration; osteophytes may overgrow and fuse to maintain stability and prevent neurological deficits. However, due to undue stress and strain signals transferred to the spine by occupational hazards, and strenuous activities, the spine instability worsens, may result in neurological compromise. There are numerous surgical measures to stabilize the spine and many micro neurosurgical techniques to rescue neural structures. There are many conservative measures for spinal pain, but we still do not have a comprehensive protocol for treating degenerating disc disease of the spine. Here we highlight Advanced neuromuscular therapy protocol, starting from offloading spinal strains with the help of preventive measures (postural correction, ergonomics, COG(center of gravity) correction. Treatment measure includes pain relief by easing the neural tension, followed by maintaining normal neuromuscular tone by appropriate stretching/strengthening exercises. During the recovery phase, most of the proprioceptive receptors of soft tissues(muscle, tendon, ligament) are still inactive, and dysfunction persists. To overcome this dysfunction, recovery measures such as balance exercises and fascial stretches help complete proprioception recovery. To conclude, this protocol helps to control spine degeneration and at times reversal.

Pathophysiology of spinal instability

Paraspinal group of muscles (erector spinae, quadratus lumborum, psoas major, rotators and multifidus) arranged in groups from medial to lateral, and from cranial to caudal respectively . It spans from sub-occipital and mastoid region to the sacrum and illiac bones. Mechanotransduction and mechanocoupling is a process by which mechanical load given to spine is converted into bony changes as osteocytes, traction spur, and facetal degeneration. Myriads of biochemical coupling and biochemical interactions takes place at the cellular level, which are responsible for activation of bone regulating genes, involved in bone cells remodelling and repair. Osteocytes of vertebral body edges are mechanosensors and mechanotransducers. An active functioning muscle send repetitive signals to its origin and insertion points situated along the bony edges of vertebral bodies and adjacent structures. During

strenuous activities or undue load given to para spinal muscles, through gamma motoneuron reflex , the muscle stays in a state of increased tone (Spasm), which is protective in nature. Alpha motor neuron helps in muscle contraction secondary to stretch reflex, and gamma motoneuron helps in regulation of this contraction. When there is a repetitive strain to spine, combined results of spinal and supra spinal control of stretch reflex , will render the spinal muscles like a taut band . Muscles may be firm to palpate, muscle spasm and tightness may lead to contracture, shortening, or connective tissue fibrosis and may harbour neuromuscular trigger points.The microdialysis system studies in relation to myofascial pain confirms, that activation of pro inflammatory cytokines , neuropeptides, arachidonic acid derivatives has a major role in nociceptor activation. SP and CGRP from dorsal root ganglion reaches dorsal horn. There is no significant structural changes or damage in the muscle, but altered perception at the level of nociceptors. Functional changes at the level of axons and dorsal horns. Neuroplastic changes occurs at the level of dorsal horn and CNS respectively. Muscle proprioception is altered. During spinal movements , the stiff muscles lose their flexibility, hence the muscle origin and attachment points over the vertebral body restricts movements of segmental spine. Vertical spinal stability is provided by the vertically oriented paraspinal muscles. Incoordination of segmental spinal muscles or a group of spinal muscles due to localised spasm will result in abnormal movements of vertebral bodies and its parts with respect to adjacent vertebrae. Incoordinated movements of multiple vertebrae will result in instability of spine.

Involvement of paraspinal muscles - psoas major, quadratus lumborum, multifidus, rotators and erector spinae in acute and chronic low back pain has been documented in many studies as atrophy, fatty infiltration and altered cross sectional area of the respective muscles.When there is paraspinal muscle weakness, imbalance occurs between truncal flexors and extensors, loss of spinal muscle mass and function(Spinal Sarcopenia). DXA, MRI, CT are helpful in assessing spinal muscle mass, quality, intramuscular adipose tissue and cross sectional area(CSA) measurement. Before structural changes occurs in the muscles, changes can be picked up by electromyography studies (EMG study), which identifies fatigability of involved muscles. Verticalspinal stability, is provided by the soft tissue structures surrounding the spine. When there is neuromuscular incoordination and spinal sarcopenia, by process of mechanotrasduction and mechanocoupling entire stress is transferred to the spine and its elements. Intervertebral disc which acts as shock absorber, bears all the stress, undergoes degeneration. During disc degeneration process and height reduction, the spinal sagittal balance / COG may be restored, hence in a long standing spinal pain , secondary stability achieved following entire spinal degeneration, and patient is pain free. On the other hand , when the intervertebral disc lost its function , furthermore added instability will result in gross deformity of the spine. At this stage , routine decompression, fusion and stabilization spine procedures will not be enough, correction of spinal sagittal balance is mandatory to restore spinal stability.

Instability prevention and corrective measures
Centre of gravity(COG)

We maintain our upright posture against gravity. Though we adopted to live against gravity, in a complete day except for the sleeping time we are exposed to the gravitational force more than we think. The gravity has a key role in degenerative diseases of spine. When we maintain our body's COG, the spinal degeneration is under control. Whereas if there is loss of COG alignment , the magnitude of stress and strain signals send to the spine is huge to activate degenerative changes in the spine. By maintaining COG, we can destress the spine while performing our regular activities in upright position thereby enabling vertical spinal stability.

There are two aspects of COG. Gravity line of COG - a Sagittal line drawn from head end to the foot end, which crosses the ear lobe, across shoulder joint, lateral chest wall, anterior to sacroiliac joint, through the greater trochanter, posterior to patella, anterior to ankle joint. The second aspect is COG

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point with respect to every joint. Every bony joint will have its COG point in its centre. For example - COG point of foot is in the midfoot, and for the knee is in its centre. But one cannot stand

exactly by maintaining COG in centre of the foot. An equilibrium position between line of gravity which is anterior to ankle joint and the midfoot, will be the exact point ,one can hold the entire body weight in perfect alignment with COG. Hence COG line and COG point will be midway between ankle joint and midfoot. The same applies to the knee joint. COG of knee is in it's centre, but one cannot maintain exactly in its centre but slightly anterior to knee joint, but posterior to patella.40,41,42 If the COG line crosses all joint in its centre ,the entire body will not have adequate torque to hold the body in perfect position without strain. Hence for one joint the line will be slightly anterior and for the above joint the line is slightly posterior and accordingly to other respective joints. So, the body will have perfect torque to maintain COG alignment.

COG correction is applied throughout the day while performing any activities which includes sitting standing and walking. COG point of the entire body lies above the hip and below the umbilicus within the centre of lower abdomen. One can feel it. The coordinated action of pelvic floor and abdominal muscles along with rhythmic respiratory pattern will help one to feel it perfectly. One has to contract the anal sphincter and keep it slightly closed. While performing you can feel the indrawing umbilicus and maintain normal respiratory pattern. At this stage one can feel a sensation in the centre of lower abdomen, which is exactly the point of COG.

Apart from COG correction, one has to correct the posture. Postural correction aims at maintaining the spine straight at all times. The next would be integrating ergonomics at the workplace, home, kitchen, and also while sleeping. Advanced neuromuscular coordination - preventive measures includes at first correcting the posture, secondly integrating ergonomics and third COG correction.

Soft tissue techniques to ease neural pain

Wide variety of soft tissue techniques are available. All are based on initial manual palpation of soft tissue structures, followed by release sequence and mobilization techniques. Identification of abnormalities such as tense (spasm/ taut band) or altered feel on palpation of muscles tendons ligaments and connective tissues, which reduces joint range of motion. Magnetic Resonance Elastography is helpful in identifying taut bands. Myofascial concepts and exercises are focused on easing the involved structures, which can be learned and applied by all in regular clinical practice .

Palpation of soft tissue structures has to be regularised in routine clinical practice, in view of the neural tension created by the soft tissue structures plays a role in degenerative disease of musculoskeletal system which includes spine.

Neuromuscular stretches

According to Sherrington's law of reciprocal innervation, self stretching exercises when performed properly helps in stretching a muscle or group of muscle and simultaneous contraction of the antagonist muscle accordingly. Coactivation of trunk flexor and extensor muscles helps in neuromuscular coordination of spinal muscles while doing exercises and also in regulating the muscle tone and spasm. The spinal reflex helps in relaxing the involved muscles . Though there are several forms of stretching, its adequate if one performs self stretch within 50% limits. Overstretching may precipitate reflex spasm.

Graded Strengthening exercises

Our regular daily routine work incorporates some form of strengthening exercises. Even while performing stretching exercises, another group of muscles undergo strengthening exercise. The local spinal stabilizing muscles are transversus abdominis, lumbar multifidus, internal oblique muscle and quadratus lumborum, and the other muscles such as erector spinae, external oblique, rectus abdominis are global spinal stabilizing muscles. All these core stabilizing muscles are responsible for spinal stability. Simple Core strengthening exercises done against our own body weight, helps trunk and spinal muscles involved in COG correction, as well as maintaining segmental spinal stability. These muscles have

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high torque which helps in preventing spinal instability and protects spine from degeneration.

Fascial and Balance exercises - recovery program

Our entire body is interconnected from head to toe by means of firm multiple fascial networks. As we do exercises for specific group of muscles, we have specific stretches for superficial and deep fascial structures. When undue fascial strains exists, treating the muscles separately will not suffice. Dorsal horn neurons are stimulated in low back pain secondary to fascial strains. Fascial stretches helps in relieving contracture of soft tissues and improves neuromuscular dynamics of muscles.

Cochraine Systemic review and meta-analysis of various randomised control trails suggest that balance exercises plays a major role in injury prevention. Both fascial and balance exercise - recovery program serves by activation and maintaining proprioceptive receptors activity, modifying cortical reorganization, improving sensorimotor function in patients recovering from an musculoskeletal dysfunction, injuries and in older patients.

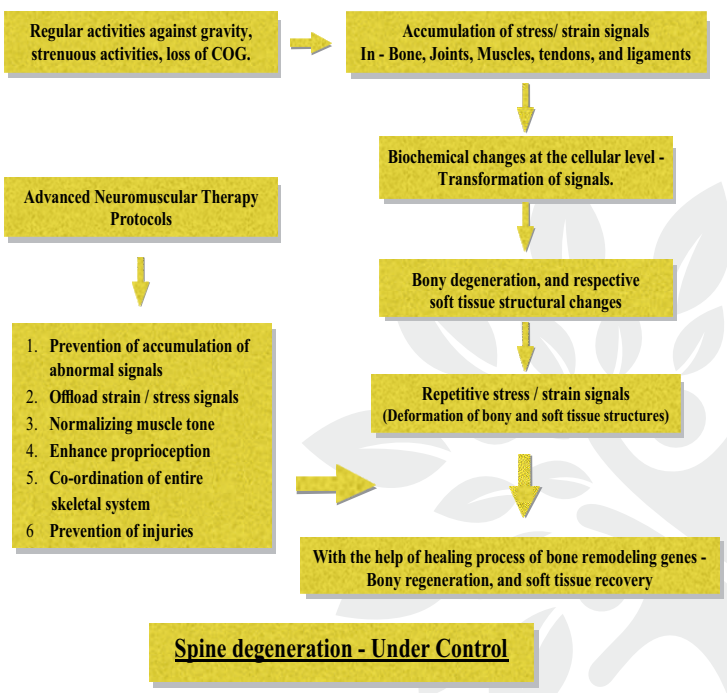
Discussion

Degenerative disease of Spine presenting as neck pain and low back pain, with high prevalence in the community all over the world, holds a major health issue and increasing global burden. Global burden of disease study 2017, confirms that Low back pain being the first leading cause for YLDs worldwide. Meta-analysis of systemic studies and cochrane database suggest, inspite of significant fusion surgeries done for chronic LBP, in terms of efficacy there is little consensus. In this present Microneurosurgical Era we have a lot of advanced surgical techniques and significant conservative measures for treating degenerative disease of spine. Still we have difficulties in overcoming this burden. These Advanced neuromuscular therapy protocol which includes preventive, treatment, and recovery measures could help in overcoming the difficulties in treating degenerative disease of spine patients (Figure 1,2). These conservative nonoperative measures plays a vital role in recovery of the patients undergone spine surgeries. These protocol has to be applied at an earlier stage when a patient comes to us with spinal pain. At this time radiological changes may not be appreciable ,but later degenerative changes occurs. Here is an example of a 50 years old female patient presenting with severe lumbar radiculopathy, and surgical indications, but she recovered completely with conservative measures. Her follow up scan after one year (Figure 3). To conclude better results are achieved when we combine both nonsurgical and surgical measures in treatment options. Surgical outcomes are poor if spinal sarcopenia is not addressed preoperatively and postoperatively. Step-wise treatment approach mentioned in figure 4

Conclusion

This article aims at highlighting the conservative measures available for a healthy spine, and also highlights the fundamental aspects of spine degeneration, apart from trauma, congenital issues, inflammatory and infective aetiologies. This advanced neuromuscular therapy protocol is a collection of minimal technical aspects, which can be easily applied and taught to the patients to modify their spine degeneration. When this conservative protocol followed up regularly along with surgical measures in regular clinical practice , may help to achieve great success and good results.

(Figure 1)



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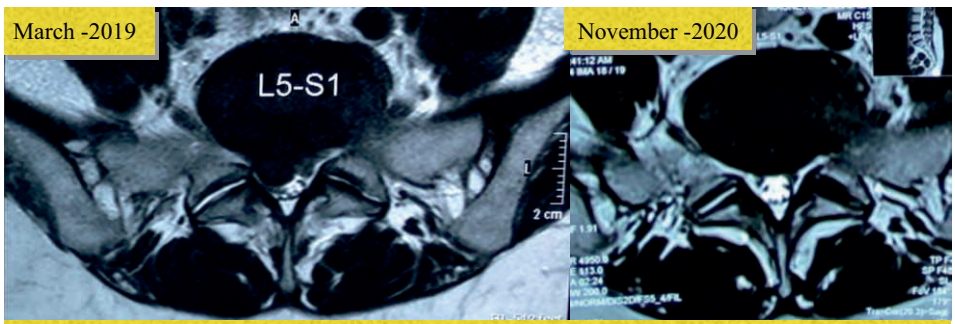
Advanced Neuromuscular Therapy protocol - For Degenerative disc disease of spine.

Preventive Measures	Treatment Measures	Restorative Measures
1. Postural Correction	4. Soft tissue techniques (Release neural tension)	7. Balance Exercises
2. Integrating Ergonomics	5. Unique Neuromuscular Stretching Exercises	8. Fascial Stretches
3. Center of Gravity (COG) Correction	6. Graded Strengthening Exercises	



(Figure-3) - MRI -L5-S1 axial view of 50 years old female, with right L5, S1 radiculopathy, pre and post treatment with Advanced Neuromuscular therapy protocol

(Figure 4) Stepwise treatment approach - Advanced neuromuscular therapy protocol

Analyse the work pattern and daily activities	Get an idea -How patient got spinal pain
Appropriate ergonomics and positional corrections	Offload the spinal strain
Centre of gravity (COG) correction	Offloading entire spine from strains
Identifying group of muscles responsible for pain	Palpable taut/firm muscle on palpation
Soft tissue release techniques	Trigger point / Myofascial therapy
Neuromuscular Stretching Exercises	Neural tension released
Fascial and Balance exercises	Recovery of entire body as a whole
Graded Strengthening Exercises	Training entire body to overcome strains

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GLIMPSE

75th Independence Day Celebration flag hoisting @ Royal Care Premises

Inaugurated New Bronchoscopy Suite with ERCP system by Chaiman at Royal Care on 10.06.2021

Covid 19 Vaccination Centre Launched at Royal Care on 13 July 2021

Health Awareness Talk Program conducted by Dr. G. Nivedita on 01.10.2021 at Royal Care premises

Welfare Officer Ramesh Babu handed over relief items to the migrant workers working at the Royal Care on behalf of the Govt.of TN on 01.07.2021

Onsite Covid 19 Vaccination Camp conducted at Prominance Company, Selakaraichal, CBE on 14.08.2021

Onsite Covid19 Vaccination Camp conducted at Viswadeepthi Hr.Sec.School, Pollachi with pollachi Lions Club on 11.08.2021

Rotary Coimbatore City and Royal Care organized a 1 million free blood sugar test program at royal care premises and 900 people were testing their blood sugar level

Workshop on Overview of ECMO

ECMO is a type of extracorporeal life support provided in refractory cardiac or respiratory failure. Though ECMO usage had increased over years, it saw an exponential growth during the COVID pandemic. Considering the need of this advanced life support system, Coimbatore Medical College hospital acquired the ECMO equipment recently. Initiation, maintenance and successful weaning of a patient on ECMO is challenging and it needs a trained and well experienced team. Taking this into consideration, one day training program on "Overview of ECMO" was planned and organised by the Institute of Critical Care Medicine along with Department of Cardiothoracic surgery and Getinge on 20.07.2021.

ECMO hands on training

20-member team headed by Dr. Srinivasan, HOD, Department of Cardiothoracic Surgery, CMCH attended the program. The team included Cardiothoracic surgeons, Anaesthesiologists, Physicians, Perfusionists and staff nurses. Training covered Physiology of ECMO, ECMO Cannulation, Initiation & management, monitoring, troubleshooting, weaning and complications. Training also included simulation-based trouble shooting of commonly encountered clinical scenarios and hands on practice of venous and arterial cannulation on a mannequin. At the end of the program all the participants had a good overview about ECMO. Best wishes for Coimbatore Medical College Hospital to have a successful ECMO programme.

Congratulations!

DR. M.N.SIVAKUMAR
DA, DNB, IDCCM, EDIC, FICCM.,
Head - Institute of Critical Care Medicine

Dr. M.N.Sivakumar have been elected as **Zonal member - South to the executive committee of Indian Society of Critical Care Medicine,** for the year 2022-2024.

Another feather in the cap of
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BRACHIOPLASTY - ARM LIFT

Dr. C. Senthilkumar
MS, MRCS, (UK), MCh (Plastic).,
Consultant Plastic and Cosmetic Surgeon

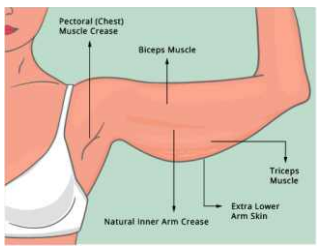
A Brachioplasty is a surgery that reshapes the back part of the upper arm, from armpit to elbow. It's also called as arm lift. It removes extra skin and tissue and makes your upper arm look smoother. It is a type of body-contouring surgery.

As ageing advances, the skin on your upper arms like other areas of the body loses its elasticity and becomes sagging. Significant weight loss, especially after bariatric surgery, also cause the undersides of your upper arms to droop.

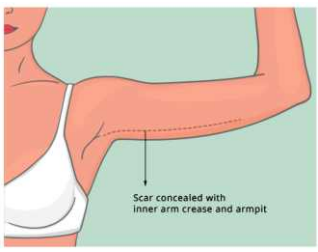
While exercise can strengthen and improve muscle tone in the upper arm, it can't address excess skin that has lost elasticity.

When only fat is excess without the skin sagging liposuction offers a simple solution. The greatest merit of liposuction is that it is scarless. In Brachioplasty, the scar depends upon the type of skin excess. The scar may extend from your armpit up to the elbow, mostly hidden inside. It all depends on your expectations and the surgeons pre-op planning.

Pre-op marking for the skin excision. Scar is planned in a way that final line falls hidden on the inner side. The incision can be extended on to chest if needed.



Before Surgery



After Surgery

Pre-op marking. first, the future scar is placed and the upper and lower extend is marked

The plan of excision is kept above the superficial fascia. This prevents accidental injury to the superficial nerve

Deciding closure without tension by division and check closure like shown

Final scar. Inconspicuous and present on the inner side.

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"NITROUS OXIDE INHALATION SEDATION- A boon for dental anxiety and fear."

Dr. Suresh G MDS.,
Fellow in Cleft & Craniofacial Surgery (Smile Train)
Consultant Oral & Maxillofacial Surgeon & Implantologist.

Introduction:

Pain and the fear of pain have long been associated with dentistry. Modern dentistry has the means to control pain, either with safe reliable local anaesthetics, intravenous sedation, or in some cases, general anaesthesia. Yet, for many people, the fear of dentistry remains a serious deterrent to seeking and receiving needed dental treatment. In fact, many people neglect dental care because of the fear of pain and unpleasant past experience during dental treatment.

To a large degree, success in dentistry requires the recognition and effective treatment of fear and anxiety in patients. Local anaesthesia does not necessarily reduce fear, and in fact, since it is administered by a "needle" may be the source of fear itself. A broad range of anxiety control methods is available to dentistry today. We have introduced one such method – Nitrous oxide inhalation Sedation (NOIS) in the Dental OPD at Royal care Superspeciality Hospital, Neelambur, Coimbatore. And presenting here a case of a young boy successfully treated with NOIS at our OPD.

Case presentation:

9 year old boy was brought to Dental & Maxillofacial OPD with a complaint of delay in eruption of the right upper front permanent tooth for 2 years since the fall of milk tooth. History revealed that they have consulted a dental surgeon 2 years back at their native place and was advised OPG Xray, which could not be taken because the boy was not cooperative then with severe temper tantrums. Hence seeking dental treatment was delayed for 2 years.

The patient is not a known epileptic/ asthmatic/ any drug allergy. No history of any congenital heart disease and was immunized to age. No history of any previous hospitalization or any surgeries done

On examination, he had mixed dentition as for his chronological age except for a supernumerary mesiodens (bud shaped extra tooth) in the place of the right upper incisor tooth, whereas the left upper incisor tooth normally erupted, and a bulge due to the impacted right central incisor was palpable in the alveolar bone at right labial sulcus (Pic 1). Partial tongue-tie preventing complete free movement of the tongue in protrusion and elevation.

He was cooperative for the examination but seemed to be very anxious and reluctant, hence was counselled regarding the need for an OPG x-ray and further treatment to get his permanent tooth to its original place. OPG and IOPA radiograph (Pic:2) showed the presence of another supernumerary tooth impacted within the bone obstructing the eruption path of normally developed right permanent central incisor in addition to the erupted mesiodens.

The treatment plan was the extraction of erupted mesiodens and surgical removal of impacted supernumerary tooth and tongue tie release to be carried out under local anaesthesia if he is not cooperative then options given to the parent was procedure under general anaesthesia or under Nitrous oxide inhalation sedation. The pros and

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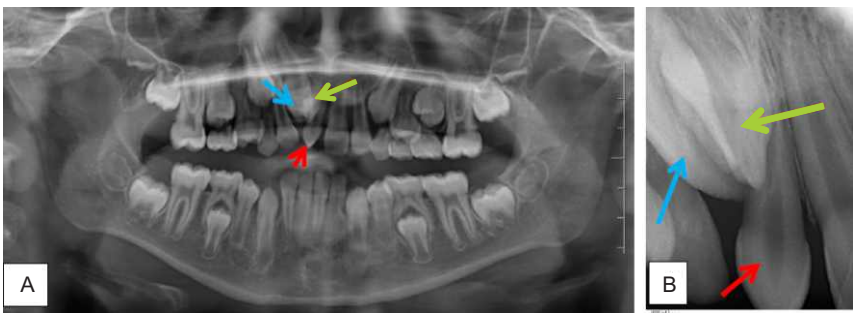
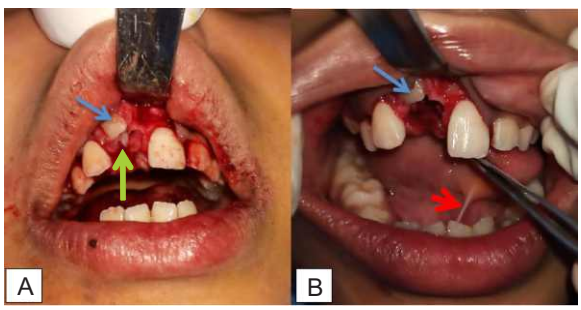
cons of both were explained including the cost and the patient's parents opted for NIOS with Local anaesthesia. A pre-sedation questioner and instructions were given and the procedure was carried out on OPD with consent. (Pic :3, Pic : 4)

Patient went back home immediately after the 45 minute procedure, which would otherwise take more time and impossible to do with local anaesthesia.

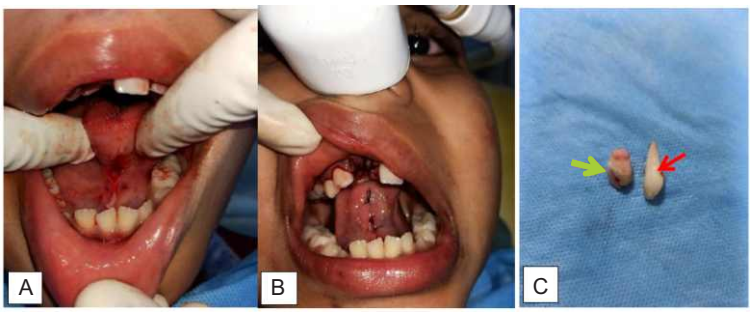
Pic: 1 Supernumerary mesiodens(bud shaped extra tooth) in the place of right upper incisor tooth (Red Arrow).Bulge due to the impacted right central incisor (Blue arrow).



Pic: 2 A: OPG & B: IOPA radiograph showing Mesiodens (Red arrow) erupted in place of permanent central incisor and position of impacted permanent central incisor tooth (Blue arrow) and supernumerary tooth (Green arrow).



Pic : 3 A: Exposed impacted supernumerary (Green arrow) below the permanent central incisor tooth (Blue arrow). B: Partial tongue-tie (Red arrow) and empty socket after surgical removal of impacted supernumerary tooth.



Pic: 4 A: Tongue-tie released. **B:** mucosa sutured. **C:** Extracted supernumerary (Green arrow) and mesiodens (Red arrow).

Discussion :

Nitrous oxide (N2O) has been available since the mid-1800s but only gained general acceptance as dental inhalation sedation in the second half of the 20th century. Its use accelerated in the 1970s and 1980s, levelled off for a brief period because of environmental concerns, and then continued to increase into the 21st century. Nitrous oxide is a colourless and virtually odourless gas with a faint, sweet smell. It is an effective analgesic/anxiolytic agent causing central nervous system depression and euphoria with little effect on the respiratory system.[1]

Dental surgeons have expertise in providing anxiety and pain control for their patients. Although anxiety and pain can be modified by psychological techniques, in many instances pharmacological approaches are required.[2] Analgesia/anxiolysis is defined as diminution or elimination of pain and anxiety in a conscious patient.[3] The patient responds normally to verbal commands. All vital signs are stable, there is no significant risk of losing protective reflexes, and the patient is able to return to pre-procedure mobility. In children, analgesia/anxiolysis may expedite the delivery of procedures that are not particularly uncomfortable, but require that the

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patient not move.[3] It also may allow the patient to tolerate unpleasant procedures by reducing or relieving anxiety, discomfort, or pain. The outcome of pharmacological approaches is variable and depends upon each patient's response to various drugs. The clinical effect of nitrous oxide/oxygen inhalation, however, is more predictable among the majority of the population.

A The objectives of nitrous oxide /oxygen inhalation include

- Reduce or eliminate anxiety
- Reduce untoward movement and reaction to dental treatment
- Enhance communication and patient cooperation
- Raise the pain reaction threshold
- Increase tolerance for longer appointments
- Aid in the treatment of the mentally/physically disabled or medically compromised patient
- Reduce gagging
- Potentiate the effect of sedatives.

Indications

- A fearful, anxious, or obstreperous patient
- Certain patients with special health care needs
- A patient whose gag reflex interferes with dental care
- A patient for whom profound local anaesthesia cannot be obtained
- A cooperative child is undergoing a lengthy dental procedure.

Contraindications

- Chronic obstructive pulmonary diseases
- Severe emotional disturbances or drug-related dependencies[4]
- First trimester of pregnancy[5]
- Treatment with bleomycin sulfate[6]
- Methylenetetrahydrofolate reductase deficiency.

Advantages

- Easy to administer
- Onset of action is rapid
- N2O has bland, pleasant, nonirritating order
- Rapid uptake and elimination of N2O ensures that no hangover effect is experienced
- Recovery is fast
- Titration is possible
- There is a wide margin of safety
- There is cardio-respiratory stability
- Nausea and vomiting are uncommon
- Reflex integrity is maintained
- No preparation of the patient is required
- No need for an escort.

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Selfless Service... Journey ends...

05th April 1975

20th August 2021

Dr. P. Krishnananda MBBS, MBA, FAGE, PGDCR.,
Chief Operating Officer

Dr. P.Krishnananda was a renowned hospital Administrator with sterling qualities, principles and strong convictions.

A decade rich administrative experience in Top Management in hospitals and 13 years of Clinical experience at major Corporate hospitals in Critical Care and Cardiac Surgery helped him work seamlessly.

During the Pandemic crisis, he has helped several patients to get admission and treatment at our hospital.

He is survived by his wife and two daughters and is remembered as a man who was strong, compassionate and kind.

Welcomes...

Dr. Madeshwaran Mani

MD, DM (Rheumatology).,
Consultant Rheumatologist

Completed M.B.B.S from K.A.P.Viswanatham Government Medical College, Trichy in 2009 and he has achieved M.D (Pediatrics) from the Institute of Medical Sciences, Varanasi in 2013 Also, he completed D.M (Rheumatology) from Madras Medical College, Chennai in 2016. Subsequently, he completed an Indo-UK fellowship, Bristol, UK. He worked as a Specialist in Rheumatology Department in Prime Healthcare, Dubai, UAE from 2017 to 2020. Later, he worked as Assistant Professor in the Rheumatology Department in Sri Ramachandra Institute of Higher Education and Research (SRIHER), Chennai, before joining our Royal Care.

Dr. M.R. Jeeva Priya

M.D (Immuno-Hematology & Blood Transfusion), DDVL.,
Consultant Transfusion Medicine & Blood Bank Medical Officer

Completed her MBBS from Madurai Medical College, Madurai in 2003, and she has achieved DDVL from Stanley Medical College, Chennai in 2006. Also, she achieved M.D (I.H & B.T) from T.N. Dr MGR Medical University, Chennai 2010. He worked as Assistant Professor in the pathology department in SDM College of Medical Sciences & Hospital in Karnataka before joining our Royal Care.

Dr. Preethi. K

MBBS, M.D (Radiology).,
Consultant Radiologist

Completed MBBS from Sri Venkateshwara Medical College, Hospital and Research Centre, Puducherry in 2011. She also achieved M.D (RD) from Sri Manakula Vinayagar Medical College and Hospital, Puducherry in 2021. She joined as a Consultant Radiologist in our Royal Care Hospital.

Dr.S.Sathish

MBBS, DNB (Emergency Medicine).,
Consultant Emergency Physician

Completed his MBBS at Sri Venkateshwara Medical College Hospital, Puducherry in 2015. Completed DNB - Emergency Medicine at Rajah Muthiah Medical College, Annamalai University, Chidambaram in 2021. He joined as a Consultant Emergency Physician in our Royal Care Hospital.

Dr. P. Shanuka

DMRD, DNB (Radiology).,
Consultant Radiologist

Completed her MBBS in PSGIMS &R, Coimbatore in the year 2013. and she has achieved DMRD at Stanley medical College from 2016-2018 Also she achieved DNB radiology in KMCH Coimbatore from 2019-2021. Now she joined as a Consultant Radiologist at our Royal Care.

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