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ROYAL CARE HOSPITALS

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- **Editor & Publisher**

Dr. K. Madeswaran

Chairman - Consultant Neuro & Spine Surgeon

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PATIENT SAFETY & QUALITY OF CARE
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CHAIRMAN'S COLUMN

Warm greetings to all..!!

As we step into the 8th year, it's been an incredible journey and Royalcare Super Speciality Hospital has evolved as the preferred healthcare destination for patients.

Our commitment to excellence in healthcare remains unwavering, and we are dedicated to providing the highest quality of care to our patients. At Royalcare, we recognize that health is not merely the absence of disease but a holistic state of well-being encompassing physical, mental, and social dimensions.

The resilience and dedication of our healthcare professionals have been nothing short of inspiring. I want to express my heartfelt gratitude to the doctors, nurses, support staff, and every individual who contributes to the smooth functioning of our hospital. The tireless efforts make a significant difference in the lives of those we serve.

As we move forward, we are committed to embracing innovation and staying at the forefront of medical advancements. Our focus is on patient-centered care, ensuring that your experience at Royal Care is marked by compassion, empathy, and the highest standards of medical practice.

Your trust is the cornerstone of our success, and we are dedicated to maintaining transparency and open communication. We welcome your feedback and suggestions as we continuously strive to enhance our services.

In the face of the evolving healthcare landscape, we are investing in technology, training, and infrastructure to meet the changing needs of our patients. Our goal is to create an environment that fosters healing, recovery, and the overall well-being of our community.

I invite you to join us on this journey towards a healthier future. Together, let us build a community where good health and compassion thrive.

Wishing you and your loved ones good health and happiness.

Regards

Dr. K. Madeswaran

Founder Chairman

contact@royalcarehospitals.in 0422 - 2227000

From The EDITOR'S DESK

"A mind that is stretched by a new experience can never go back to its old dimensions."

- Oliver Wendell Holmes

War and destruction rampages around the world and its effects are felt in the economy even in our part of the country. Growth is hampered but not stopped in our hospital. We have started the next phase of expansion with a spring in our step and already the basement levels are being completed. When the new building is completed, it will house some of the most advanced technologies and treatment modalities in the world to benefit our patients.

Dr.K.Madeswaran our chairman has been carrying the name of our hospital to many parts of the world where he has been giving invited lectures on functional Neurosurgery. He has been the driving force behind us to obtain modern technology and the new rTMS machine which has been commissioned from November 2023 shall be of great help in the recovery of many patients with stroke, depression, etc.

In the last few months also, we conducted public awareness programs and camps which were conducted in TNPL, Honda, etc and we also celebrated Nutritional Day, PMR Day, Blood Donation Day, women's safety awareness meetings, etc to benefit the employees and bystanders. In this edition, we have articles on Haemodiafiltration, Methemoglobinemia, carotid artery stenting, and other very high-end work

We congratulate Dr. Kalyanakumari for the Invited lecture at the national Gyenec Laparoscopy conference, Dr.A.K.Jaleel for receiving the Maruthuva Natchathiram award, and Dr.M.N.Sivakumar for being awarded an honorary fellowship at the national level.

We welcome Dr.Asokan, Dean and senior plastic surgeon who shall be the academic head for the colleges and we also welcome all our new consultants who have joined the ever-growing Royal Care Hospital medical fraternity and wish them success in their endeavors.

A CASE SERIES OF ACQUIRED METHEMOGLOBINEMIA DUE TO PESTICIDES: CONVENTIONAL TO NOVEL THERAPIES

(Institute of Critical Care Medicine)

Introduction

Methemoglobinemia is a severe condition precipitated by oxidant stressors in the body. It occurs due to the oxidation of the ferrous (Fe^{2+}) ion in the heme molecule of hemoglobin, leading to the formation of the ferric (Fe^{3+}) ion. This dyshemoglobin has a reduced ability to bind oxygen. Hence, it reduces the oxygen-carrying capacity of blood and also dissociation of oxygen, leading to tissue hypoxia. (1) It may be congenital or acquired. Drug-induced methemoglobinemia is common with dapsone, local anesthetics, and antimalarials. Here we discuss three patients with acquired methemoglobinemia due to a rare cause of pesticide consumption with varied presentation, severity, and treatment response.

Case Series :

Case 1

A 74-year-old gentleman was admitted to our hospital with hypoxia, and frothy secretions from mouth and nose following intentional insecticide (Abamectin – avermectin group) consumption of an unknown quantity. On arrival at the emergency department, he was comatose, gasping, hypotensive and hypoxic. He was intubated, and gastric lavage was done. On arrival at the intensive care unit (ICU), SpO2 did not improve with FiO2 increments. However, the partial pressure of oxygen was 250 mmHg with normal saturation on arterial blood gas. In view of this oxygen saturation gap, Co-oximetry was done and it revealed methemoglobinemia (methemoglobin levels of 66%) with compensated metabolic acidosis. Intravenous methylene blue at a dose of 1 mg/kg was administered and as there was no response it was repeated after 30 minutes. His SpO2 improved to 100% and methemoglobin levels dropped to 2.5%. Acidosis improved and hemodynamics were stable. The next day methemoglobin levels rose to 15 % with dropping saturations, and the third dose of methylene blue (1 mg/kg) was administered. Methemoglobin level, and saturation normalized and did not have a relapse. He was weaned off ventilation and transferred to the ward. and discharged home on day 4.

Case 2

A 57-year-old gentleman with an alleged history of consumption of approximately 50 to 100 ml of a pesticide (1:2 compound- containing bio emulsifier 6%, oligosaccharide-8%, fillers/carriers-86%) at his home, presented within 2 hours to a private hospital where gastric lavage was done and referred for deteriorating conscious level. On arrival, 5 hours from the time of consumption, he was stuporous. GCS was 7/15, had central cyanosis, SpO2 -62% with severe hypotension which responded to fluid. In view of poor GCS and low spO2, he was ventilated. Post intubation SpO2-86% with 100%FiO2. His blood gases revealed normal saturations, and co-oximetry showed a methemoglobin level of 63.5%. In view of raised metHB, he was administered 2 mg/kg of methylene blue and shifted to ICU. In the subsequent arterial blood gases methemoglobin levels remained high. Further boluses of methylene blue were tried up to a cumulative dose of 7mg/kg without consistent reduction of methemoglobin levels to normalcy. G6PD deficiency was ruled out. Haematologist consultation was obtained and one cycle of plasmapheresis was attempted but the level did not decrease. An exchange transfusion was done with a liter of packed red blood cells twice in a period of 2 days. Subsequently, the methemo globin levels started to decrease and it reached 10.3 after the second session. Gradually the levels came down and he didn't require further methylene blue or exchange transfusion. He had a drop in his haemoglobin level, suspected to be due to haemolysis because of the high LDH levels, peripheral smear picture, got corrected with one unit of packed red blood cells. We were not sure whether the hemolysis was because of methylene blue itself. He remained drowsy and irritable. MRI brain showed cerebral edema and punctate haemorrhagic foci involving splenium of the

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corpus callosum, suggestive of methemo globinemia intoxication. He was tracheostomised on day 11, gradually weaned from the ventilator, and shifted to the ward. Supportive measures continued in the ward and over a period of 2 weeks, his sensorium got better, and decannulated and discharged home on day 30 of hospitalization without any morbidity.

Case 3

A 33-year-old female, with no known comorbidities, presented with alleged h/o consumption of approximately 100 ml of a pesticide (1:2 compound- containing bio emulsifier 6%, oligosaccharide-8%, fillers/carriers-86%). At the local hospital, she was given stomach wash, and activated charcoal, and found to have central cyanosis of the lips and tongue. Hence, she was suspected to have methemoglobinemia, for which she was given 3 doses of intravenous Methylene blue of 100mg each over a span of 24 hours. As there was non-improvement, she was referred to our hospital for further management. On admission to ICU, GCS was 15/15, had Sp02 of 80% in 10 liters of O2, and was hemodynamically stable. Co-oximetry showed MetHb levels of 30%. She was given 50 mg of IV Methylene blue. G6PD levels were normal. Repeat co-oximetry showed a Met HB level of 9.9% but rose within 12 hrs to 24.5%. An exchange transfusion was planned. Only 350ml venesection was done, as blood pressure dropped drastically. It was managed with colloids,1-unit Packed RBC, and Fresh Frozen Plasma was transfused. Repeat MetHb was 36%, and the patient was becoming drowsy. Hence another dose of IV Methylene blue 100mg was given. Subsequent MetHb decreased to 14.2. Though there was a response to methylene blue, the effect was not sustained and was reaching the toxic dose. A single session of Hyperbaric oxygen therapy (HBOT) at 2.2 ATA for 90 minutes was done. Post HBOT, MetHb paradoxically increased to 21.1% and then 33.8%. So, IV Methylene blue 50mg was again given. Repeat MetHb was 10.2% and then 14.1%. High volume exchange transfusion was planned, 1-litre venesection done, with 2 units Packed RBC replacement, noradrenaline, and colloid cover. MetHb levels dropped to 13% but again increased to 19%. So, another session of exchange transfusion with 1-litre venesection was done the next day, subsequent MetHb dropped to 12.7% and remained low. In total, IV Methylene blue was used 6 times (7 mg/kg), an Exchange transfusion was done 3 times, and 1 session of hyperbaric oxygen therapy was given. At last, the MetHB level was 8.5%, stopped increasing, and was shifted to the ward on day 7. In subsequent days methemoglobin levels dropped to 0.3%. The patient was weaned off oxygen support, discharged on day 12 of the hospital stay, with normal oxygen saturation, and remained stable on follow-up after a week.

Table-1 : Patient characteristics and outcome

Cases	Patient parameters	ICU course	ICU outcome
1.	74 yrs male Abamectin – avermectin group	Ventilated Methylene blue 3 mg/kg	Discharged alive on day 4
2.	57 yrs male 1:2 compound	Ventilated Methylene blue 7mg/kg 1 cycle plasmapheresis 2cycles of 1 litre exchange transfusion	Discharged alive on day 30
3.	33 yrs female 1:2 compound	Ventilated Methylene blue 7 mg/kg HBOT one session 3 cycles of Exchange transfusion (350 ml+1litre+1 litre)	Discharged alive on day 12

Discussion

Methemoglobinemia is a condition where methemoglobin levels in the blood exceed normal levels of 2%. It may be due to congenital causes like in absence of nicotinamide adenine dinucleotide (NADH) dependent enzyme, Cytochrome B5 reductase, inherited as autosomal recessive disorders. (2) NADH-dependent reduction is the main system responsible for the 99% reduction of endogenous methemoglobin produced in the body.

Acquired causes include exposure to various drugs and chemicals, sepsis, infants with severe gastroenteritis and dehydration, and sickle cell crisis. (3) Pesticides being a cause for acquired methemoglobinemia is less known, incidence is not clearly known, but it is an important fact to know in a country where they are extensively used for agriculture. Indoxacarb, aluminum phosphide,

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and paraquat are the commonly implicated insecticides for methemoglobinemia. Other agrochemicals containing biological extracts, stabilizers, and fillers like the compound used in our patients are also known to cause methemoglobinemia. Biological extracts are rich in nitrogenous products and hence can potentially cause Methemoglobinemia.

Clinically, it results in low oxygen saturation on pulse oximetry, development of cyanosis, and chocolate brown color of blood, with the normal partial pressure of oxygen and calculated oxygen saturation on arterial blood gas analysis. (3) Acute methemoglobinemia should be suspected in patients with central cyanosis with low peripheral oxygen saturation not responding to high-flow oxygen therapy. To determine the oxygen saturation, the oximeter calculates the ratio of absorbance at the 2 wavelengths. MetHb absorbs light equally at both 940 and 660 nm. In the presence of 100% MetHb the ratio of absorbance of light at 660 nm over 940 nm is about 1.0. Therefore, at higher MetHb levels, SaO2 tends toward 85% regardless of the true percentage of oxyhemoglobin. (4)

A difference of more than 5% between the oxygen saturation by pulse oximetry and blood gas analysis is abnormal. Patients with clinically significant methemoglobinemia usually have a saturation gap greater than 10%. Co-oximetry measures oxygen saturation using different wavelengths of light to distinguish between fractions of oxyhemoglobin, deoxyhemoglobin, and methemoglobin, but it is not widely available. (4)

Methylene blue is the antidote of choice for methemoglobinemia. This is an oxidant dye that channels the NADPH-reductase pathway, which is an alternate pathway in the metabolism of endogenous methemoglobin. Methylene blue acts as a co-factor for this enzyme and is reduced to methylene leucoblue, which then acts as an electron donor for methemoglobin. Symptomatic methemoglobinemia or levels above 20% are treated with 1-2 mg/kg intravenous bolus over 5-10 minutes. This will bring down the methemoglobin levels in 30 to 60 minutes. Additional doses of 1 mg/kg bolus can be given after rechecking levels. The total dose should not exceed 7 mg/kg as this can lead to chest pain, dyspnea, hypotension, and hemolysis with Heinz bodies (5). Still, this total cumulative dose is not clear as to the time span in which this dose is acceptable. The first case that we described though responded to methylene blue treatment alone, response varied from our previous experiences by requiring repeated doses three times.

For refractory cases, such as our second and third cases, not improving with methylene blue, the next option is to consider either hyperbaric oxygen therapy, plasmapheresis, or exchange transfusion (6). There are multiple case reports published on the use of hyperbaric oxygen therapy but there is no clear recommendation on its use (7,8). Hyperbaric oxygen therapy is not commonly available in all the centers, the dose and treatment protocol are not clearly defined. The efficacy of hyperbaric oxygen is also not proven. In one of our patients described with refractory methemoglobinemia, we tried one session of hyperbaric oxygen therapy and it did not have even a temporary response.

In a systematic review, Therapeutic Whole Blood Exchange (TWBE) led to a survival rate of 81.6% in patients refractory to methylene blue (9,10). TWBE though has good efficacy, still has setbacks like the availability of good blood bank support, and the difficulty of the technique if the special exchange equipment is not available. The exact volume to be exchanged and the number of sessions is also not validated. The complications during the procedure such as hypotension need close monitoring in ICU and we encountered it in our last patient in the first session, where we reduced the volume exchanged and it did not have a desirable effect. The subsequent sessions were done with a dialysis line dedicated to the exchange and adequate volume resuscitating the patient simultaneously with colloids. In both the refractory patients where we tried exchange transfusion two good carefully performed sessions of 1-liter exchange on subsequent days were found to be efficacious without many complications. Methylene blue use is contraindicated in G6PD deficient patients and makes it mandatory to consider exchange transfusion as the option in higher levels of symptomatic methemo

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globinemia. Plasmapheresis was tried in one of the refractory patients but was not beneficial.

Conclusion

Pesticide poisoning is a rarely reported cause of acquired methemoglobinemia. A high index of suspicion in these patients leads to early diagnosis and appropriate management. Methylene blue can be used to treat this condition, when the patient is symptomatic or levels of methemoglobin exceed 20%. Monitoring of methemoglobin levels may be required for a longer duration due to the possibility of relapse. For refractory cases, not improving with methylene blue, exchange transfusion is an effective alternate modality of treatment.

REFERENCES

1. Darling RC, Roughton FJW. The Effect of Methemoglobin on the Equilibrium Between Oxygen and Hemoglobin. Am J Physiol 1942;137: 56-8.
2. Yubisui T, Takeshita M, Yoneyama Y. Reduction of methemoglobin through flavin at the physiological concentration by NADPH- flavin reductase of human erythrocytes. J Biochem 1980;87: 1715-20.
3. Garg D, Edwin N. A case report of methemoglobinemia due to benzonitrile. J Clinic Toxicol 2012; 2:131.
4. S. J. Barker, K. K. Tremper, and J. Hyatt. Effects of methemoglobinemia on pulse oximetry and mixed venous oximetry. Anesthesiology 1989;70(1):112–7.
5. Monechi G, Fabrizi de Biani G, Colasanti L (1991) A case of methemoglobinemia due to 4-nitro benzonitrile exposure. Med Lav 82: 137-141.
6. Iolascon A, Bianchi P, Andolfo I, Russo R et al. SWG of red cells and iron of EHA and EuroBloodNet. Recommendations for diagnosis and treatment of methemoglobinemia. Am J Hematol. 2021 Dec 1;96(12):1666-1678. doi: 10.1002/ajh.26340. Epub 2021 Sep 23. PMID: 34467556; PMCID: PMC9291883.
7. Cho Y, Park SW, Han SK, Kim HB, Yeom SR. A case of methemoglobinemia was successfully treated with hyperbaric oxygenation monotherapy. J Emerg Med. 2017;53(5):685-687.
8. Lindenmann J, Matzi V, Kaufmann P, et al. Hyperbaric oxygenation in the treatment of life-threatening isobutyl nitrite-induced methemoglobinemia-a case report. Inhal Toxicol. 2006;18(13):1047-1049.
9. Singh P, Rakesh K, Agarwal R, et al. Therapeutic whole blood exchange in the management of methaemoglobinemia: case series and systematic review of the literature. Transfus Med. 2020;30(3):231-239.
10. Bhasker B, Ramakrishna AA. Therapeutic whole blood exchange using plasma exchange kit on a cell separator in a patient with refractory methemoglobinemia. Transfus Apher Sci. 2020;59(6):102910.

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Masterclass in Basic Laparoscopic Surgery on 29.09.2023. 6 young surgeons from Tamil Nadu and Kerala participated

contact@royalcarehospitals.in 0422 - 2227000

CAROTID ARTERY STENTING FOR CAROTID WEB AN UNDER-RECOGNISED CAUSE OF CRYPTOGENIC STROKE

Dr. K. Vijayan
MD, DNB, DM (Neuro), ASN (USA).,
Consultant Neurologist &
Neuro Sonologist

Dr. P. Sampathkumar
MD, DNB (Radiology), PDCC
(Cardiovascular Imaging and
Vascular Intervention).,
Consultant Interventional Radiologist

Dr. Hariharaprakash
RMD, DNB, EBIR, EDIR, DICR, DHHM, DMLS.,
Consultant Interventional Radiologist

The Carotid web is a non-atheromatous and non-dissecting membrane-like strand that protrudes into the lumen of the carotid artery. Pathological examination reveals aspects similar to fibromuscular dysplasia, with abnormalities mainly involving the intimal layer.

A 43-year-old gentleman was admitted with recurrent TIA's involving the left cerebral hemisphere. He was previously treated for a similar complaint elsewhere. CV Doppler showed a lesion in the left proximal ICA suggestive of a carotid web. This was confirmed by CT angiogram and DSA. The patient was treated with dual antiplatelet medications and taken up for stenting of the left ICA. The procedure was successful and he was discharged home with no neurological deficits.

Carotid webs are a cause of recurrent stroke, especially among young patients with no other vascular risk factors. A high clinical suspicion should be borne in mind during imaging cases of cryptogenic stroke. To aid in accurate diagnosis, multimodality imaging using CTA or DSA should be performed for suspicious lesions that have been detected at ultrasound or MRA.

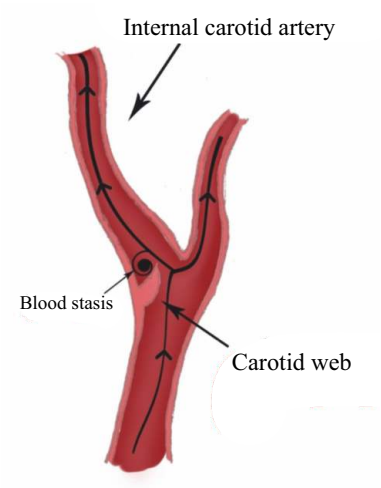
The Carotid web is mostly located in the posterior wall of the carotid bulb. It is hardly detected by Ultra-Sound (US) and it may appear similar to atherosclerotic plaques. CTA and Digital Subtraction Angiography (DSA) have been demonstrated to be the optimal neuroimaging to identify carotid web. The oblique projection during the DSA or the oblique sagittal section in CTA may be necessary.

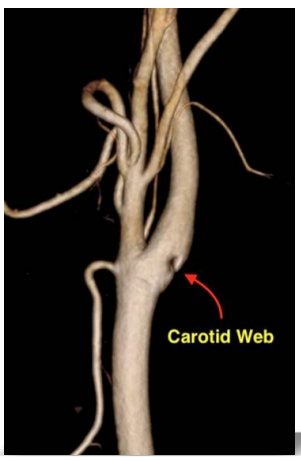
Timely diagnosis can have long-reaching effects on disability prevention and survival among patients.

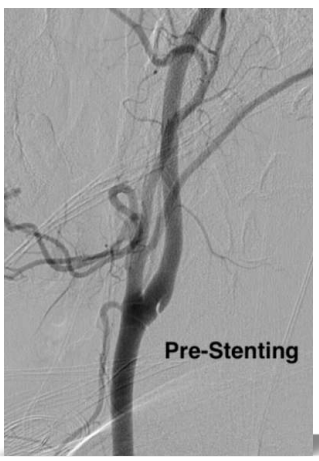
There is no randomized clinical trial regarding treatment options in patients with symptomatic carotid web. Antiplatelet therapy is suggested to be insufficient considering that blood stasis may be the underlying pathogenic mechanism of the clot formation. However, no strong evidence is available on anticoagulation.

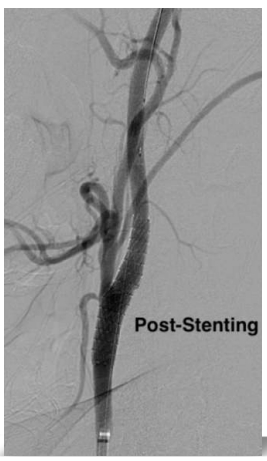
The association between carotid webs and recurrent ischemic strokes continues to be established as patients without traditional stroke risk factors are found to have carotid webs as the only possible cause of symptomatic deficits.

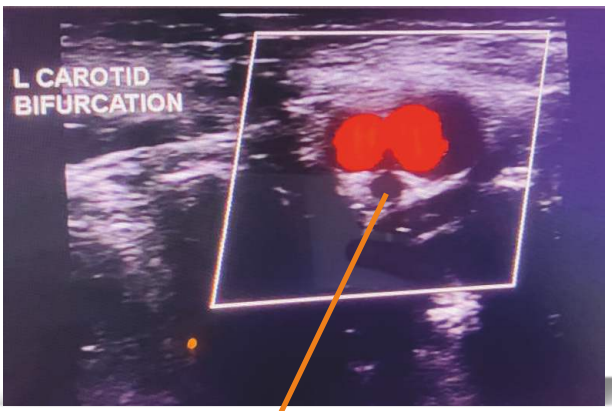
Opinions on the optimal management of carotid webs vary because of a lack of clear guidelines at present. However carotid stenting with special micro mesh stents seems to be a practical solution as they do not allow further micro-embolic phenomena, which is the primary etiology.



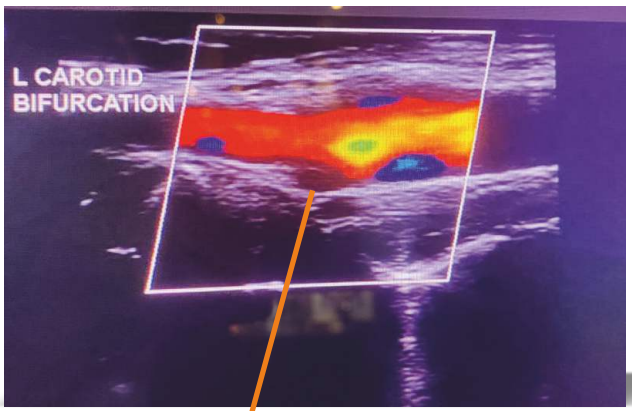








CAROTID WEB



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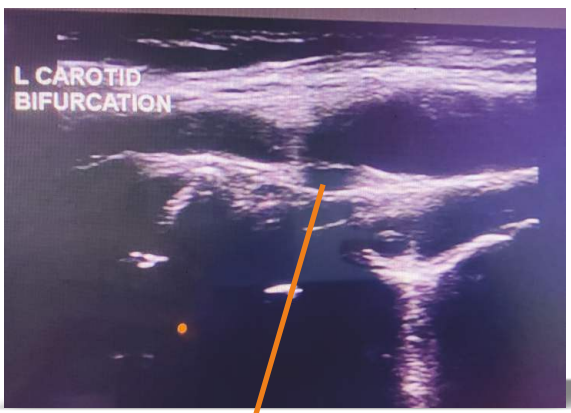

CAROTID WEB

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GLIMPSE

World Blood Donor Day celebration 14.06.2023

Women Safety Awareness Program at Royal Care 16.06.2023

Royal Opticals Inauguration 7-7-2023

Covid Warriors Award Gokulam Park Hotel 22.07.2023

Happy Feet Club Run Codissia Githanjali School 23 -07 -2023

TNPL Mega Medical Camp Karur 23.07.2023

Multispeciality Consultation Camp at TVS Sundaram Honda 19.08.2023

BLS Programme held at Royal Care 29.08.2023

National Nutrition Month Celebration 15.09.2023

Rehabilia - Paper & E-Poster Presentation Competition at Royal Care 16.09.2023

ROBOTIC SURGERY
The Intelligent Surgery

Dr. S. Kalyanakumari
MBBS, MD (OG), Dip Gyn Endoscopy (GER)
Masters Degree in Biotechnology of
Assisted Human Reproduction (Spain), MBA
Consultant Gynaecologist
Infertility Specialist, Advanced Laparoscopic and Robotic Surgeon

Robotic surgery can be claimed as intelligent surgery as robots offer stability, accuracy, integration with modern imaging technology, greater range of motion, and telesurgery in addition to multiple other benefits inherent to individual surgical specialities.

The last two decades witnessed the role of robotic surgery in almost all surgical specialities including otolaryngology, neurosurgery, gynaecology, cardiothoracic, gastroenterology, urology, orthopaedic, endoscopy and oncology.

HISTORY

- 1920 - The word "Robot" was first introduced in the year 1920. In 1920 Czech writer Kavel Capek first published a play called R.U.R which stands for Rossumovi Univerzaini Robotics [Rossum's Universal Robots] the author used the Czech word 'robota' which means "forced labour" In the Play the robots became a serving class in the society, eventually they rebel against humans and that lead to the end of humanity.
- Between 1930 and 1969 robots were still a concept.
- 1970 - NASA experimented with the idea of telesurgery as potential support for astronauts while aboard the space station. Similarly the United States Defence Research Advanced Project agency researched telesurgery for long-distance battlefield surgery.
- The 1980s The first surgical Robot PUMA 560 was used in biopsy procedure in 1985, this was implemented to reduce movements due to hand tremors.
- In the late 90s, three different systems that combined laparoscopy technology with surgical robots Davinci surgical system, The AESOP, and the Zeus surgical system were developed by engineers.
- From the '90s to the 2000s with the Zeus system of computer missions variety of robotic surgeries were performed.
- In 2003 Computer Mission was purchased by Intuitive Surgical (Davinci surgical system).
- The versius a next-generation surgical robot was launched by CMR - Cambridge Medical Robotics a British Medical technology company in the year 2014.

PERFORMANCE

The robotic system comprises three components.

1. A surgeon's console - consists of a HUD (Head-up Display) with the hand controllers. The surgeon uses the hand controllers to manipulate instruments and the endoscopic camera inside the patient.

2. A Patient side cart -

   a) In Davinci system four working Units are mounted together.

   b) CMR - Versius system consists of individual bedside units.

      VBS - Visualisation bedside unit for the camera.

      IBS - instrument bed side unit for the instruments.

3. The high-definition 3D vision system.

   Articulating surgical instruments are mounted to the robotic arms which are introduced into the body through ports.

ADVANTAGES OF MAS OVER OPEN SURGERIES :

Compared to open surgery MAS Minimal Access Surgeries which include laparoscopic and Robotics surgeries have many advantages including

- Less pain, fast recovery, and a shorter hospital stay.
- Magnified 360° view
- Less blood loss
- Better cosmetic results

ADVANTAGES OF ROBOTIC SURGERY OVER LAPAROSCOPIC SURGERY:

- Speed, accuracy, and good control over the procedure.
- Surgeons hand movements are scaled, filtered, and seamlessly transmitted to instrument tips.
- Surgeon-guided camera makes the surgical steps very precise and bloodless.
- Improved visible accuracy and fine dissection reduce the amount of thermal energy being used thereby avoiding injury to the surrounding vital structures.
- Endo wrist movement of robotic instruments allows better and more precise suturing than conventional straight stick laparoscopy.
- Elimination of hand tremors is the big advantage in performing micro-surgical procedures.
- Ultimately less fatigue during prolonged procedure for the surgeon and the team.
- Pain and analgesic requirement after robotic surgery is less.
- Specific to gynaec procedure, the concept of robotic intracapsular fibroid nerve-sparing microsurgery in patients with fibroids helps in the better healing of myometrium, minimal adhesions, and good post-operative scar integrity. It maximizes the potential for future fertility and minimizes the risk of labour dystonia and uterine rupture during subsequent pregnancy.

DISADVANTAGES :

- High cost of the unit and recurring cost of the instruments.
- Longer operative timings
- The lack of tactile feedback. (Surgeons are dependent on haptic feedback)
- Robotics systems do not allow the feeling of temperature, pressure, tension, and vibration.
- Inability to apply torque.
- Lack of haptic feedback can cause breakage in the suture materials.
- Difficulty in specimen retrieval in case of huge uterus.
- Greater incidences of vault dehiscence have been reported in some studies.
- Long learning curve and managing troubleshooting during surgery are very big challenges. (Each Hospital should create a privilege or credentialing system to determine the requirements for performing Robotics Surgeries).

FUTURE OF ROBOTIC SURGERY:

- ROBOT SURGEON though robotic surgeries are incredibly sophisticated and capable of operating with high precision they are still tools in the surgeon's hand. Truly autonomous ROBOT SURGEON may still be a long way off.

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Like challenges in making driverless cars as real-life roads have traffic, constructions, and pedestrians all this things don't necessarily show up in Google map, there are challenges in making true robotic surgeon.

There are so many variations between patients. The precise size and shape of the organs may vary, and the presence of scar tissues and the placement of nerves and blood vessels often differ from patient to patient.

The fact that organs move, poses a further complexity e.g stomach gurgles, brain jiggles, and lungs expand and contract. While a human surgeon appreciates variation in the anatomy, seeing and feeling the movements of the organs robots don't know if the scalpel is in the right place or if tissues have shifted. Time will tell us whether sophisticated tracking software will overcome all these uses.

Star - Recently in John Hopkins University, Smart Tissue Autonomous Robot was used to sew two ends of severed intestines back together in an anaesthetised pig. In this surgery, 80% of sutures could be placed autonomously but the human skill had to step in the other 17% of the time to correct things.

- SPORT - Single Port Orifice robotic technology enables to perform robotic surgery through a single port.
- **TELEROBOTICS :** Advancement in the field of telerobotic surgeries where the surgeon operates from far places.
- Extreme development includes developing "NANOROBOTS" small enough to enter the bloodstream, to identify and deal with diseased cells.
- Also robotic systems are being developed that allow surgery to be done through microscopic incisions as this application is very useful in neurosurgery where the size of incision is directly correlating to the amount of brain tissue lost.

Maybe in the future, the surgeon will just decide on surgery to identify the boundaries of organs or the location of interest and the robotic system will take over thereafter.

This paradigm shift appears possible with the Ultra modem technologies in AI.

OUR EXPERIENCE

In our hospital, we have a 'VERSIUS' Robotic system developed by CMR (Cambridge Medical Robotics) from the UK.

Advantages of VERSIUS over DaVinci :

- Ergonomic platform with an open console that permits the user to operate the device in a sitting or standing posture thus reducing stress and fatigue.
- Surgeons may use 5 lightweight robotic arms which gives greater freedom for port placement.
- The new 'V' wrist technology permits 360° of wrist motion 7 DOF (degree of frequency) and haptic feedback.

In the last year, we have done an adequate number of gynace surgeries which include hysterectomy, sling surgeries, cystectomy, and excision of cold ectopic.

In hysterectomy cases the size of the Uterus varies from normal to 22 weeks size.

Some cases are with previous caesarian section and a few cases had deep infiltrative endometriosis

Sling surgeries include sacrocolpopexy and abdominal cerclage. To my surprise in the literature, only very few cases of robotic Sling surgeries have been reported. And we have done the first abdominal cerclage with VERSIUS Robot.

All surgeries were completely done by robot except in one case of prev. LS.CS bladder dissection was done with harmonic through conventional lap. approach.

Also, morcellation in case of a huge Uterus could be done only by lap morcellator. Duration of surgery varies from 45 minutes to 7 hours depending on the size of the uterus, and the presence of adhesions.

Blood loss is very minimal <5ml except in one case in which the loss was around 200ml.

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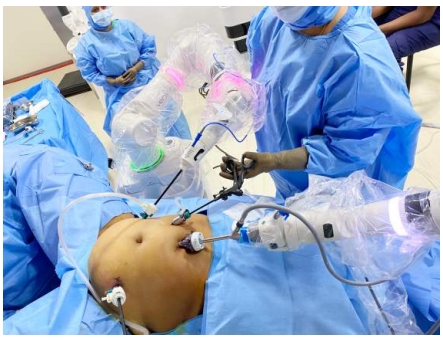
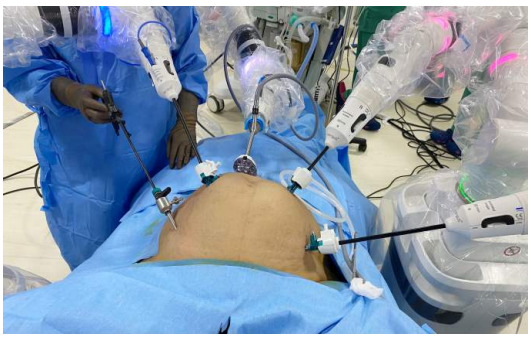
Uterine manipulation in huge Uteri is really challenging as in conventional laparoscopy we can use additional manipulators like myoma screws.

Pain and analgesia requirement after robotic surgery is said to be very less.

This was very obvious in our patients and this could be due to less movement at the abdominal wall through the operative ports. The fulcrum of movement of a laparoscopic hand instrument is at the abdominal wall level, but this fulcrum in robotic surgery is at the level of the instrument inside the patient's abdomen.

All our patients were discharged on the second postoperative day.





Online Haemodiafiltration - A Boon for End stage kidney Disease Patient

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

Case 1:

A 68-year-old male patient, a known case of Type 2 Diabetes Mellitus, Systemic Hypertension & Chronic kidney disease progressed to end-stage kidney disease and was undergoing maintenance haemodialysis in his native town.

He presented to us with restless leg syndrome (A known, disabling movement disorder occurring during periods of inactivity - more prevalent among dialysis patients). This complication is presumed to be due to the accumulation of multiple uremic toxins including high molecular weight toxins which are not removed by conventional haemodialysis sessions. He was treated conservatively for the same and came to us with persistent disabling severe symptoms.

He was initiated on Online Haemodiafiltration (a new renal replacement therapy modality) weekly thrice and over the next two months he had progressive improvement in his symptoms and later became symptom free. His other markers of uremia also improved well and continues to be on Online HDF now for 1 year with increased general well being. At present he tolerates weekly twice dialysis & thus able to reduce cost and travel.

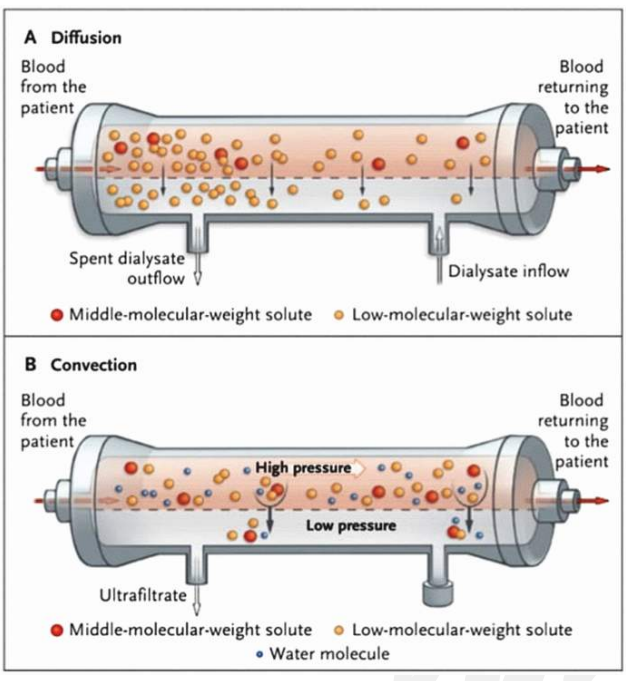
Case 2:

A 35-year-old male a patient with End-stage kidney disease and no prospective living donor was on maintenance haemodialysis (weekly thrice). In spite of regular dialysis sessions, he had very high phosphorus & continued with the maximal amount of phosphate binders too. High Phosphorus in ESRD patients promotes severe vascular calcification and leads to premature cardiovascular diseases.

He was initiated on Online Haemodiafiltration, (weekly thrice) and his levels normalised within three months and the requirements of phosphate binders was also reduced. He continues to be on Online HDF with improved biochemical and clinical parameters.

Toxin removal in Conventional Hemodialysis

Low molecular weight toxins (MW - <500 D) and middle molecular weight toxins (MW 500 to 15,000 D) contribute to the Uremic syndrome, and long-term patient survival depends on the removal of both these classes of toxins. Conventional haemodialysis mainly works on the principle of passive diffusion, where middle molecules are not cleared. (As the molecular weight of the solutes increases, its clearance by diffusion becomes less efficient).



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Online Haemodiafilteration (Online HDF)

Online HDF is a relatively new Renal Replacement therapy modality that requires an advanced machine and Ultra Pure water for dialysis. Here the Machine prepares the replacement fluid from the Ultrapure water. This modality works with the principle of both diffusion and convection. By convection, there is maximal clearance of middle molecules. (Eg. P2 - Micro-globulin, myoglobin, leptin, Advanced glycation end products, and phosphate). which contributes to the superiority of Online HDF one coventional hemodialysis.

Advantages of Online HDF:

Online HDF mitigates most of the undesirable complications of conventional Haemodialysis.

A). Haemodynamic Stability:

Recurrent Hypotension and haemodynamic instability which is known to cause sudden and long-term cardiovascular mortality in conventional HD is avoided in online HDF due to the use of a large volume of replacement fluid

B). Decreases Inflammation:

Inflammatory markers like C- reactive protein and interleukin-6 are decreased with online HDF, co-relating with improved patient survival in this modality of RRT.

C) Parameters of nutrition

D) Anemia Control

E) Quality of Life

F) Cardiac Hypertrophy

G) Dialysis-related Amyloidosis

Are all improved with Online Haemodiafiltration.

CONVINCE TRIAL :

The "CONVINCE TRIAL" looked at the **"Effect of Haemodiafiltration or Haemodialysis on mortality in kidney failure"** and was published in the New England Journal of Medicine (NEJM) in June, 2023. It included 1360 patients with a median follow-up of the 30-month. This study revealed a 23% decrease in mortality rates for patients treated with high volume Haemodiafiltration compared to those treated with more commonly used high flux haemodialysis.

"As caregivers we need to explore methods that promote the adoption of hemodiafiltration making this important therapeutic option more readily accessible to the patient we serve".

Welcome

Dr. B. Asokan MS, MCh (Plastic Surgery).,
Dean,
Senior Consultant Plastic and Cosmetic Surgeon

Completed MBBS from Madurai Medical College, Madurai. MS (General Surgery) from Coimbatore Medical College, Coimbatore. And MCh (Plastic Surgery) from Madurai Medical College, Madurai. He has 37 years of Surgical Experience, 27 Years of Plastic Surgical Experience, and 23 years of P.G. teaching Experience. He worked as a Dean of Government Medical College Hospitals at Coimbatore, Karur, and Krishnagiri before joining our Royal Care.

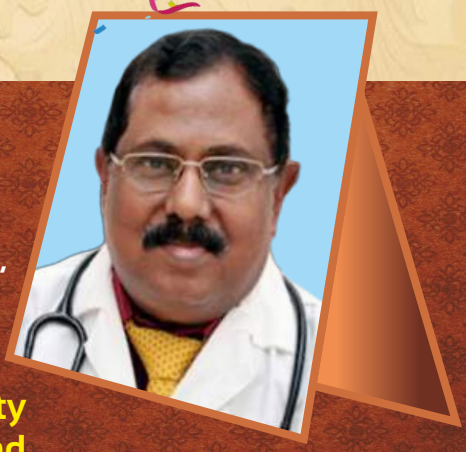
Congrats

Dr. M. N. Sivakumar

MBBS, DA, DNB, IDCCM, EDIC, FICCM.,

Head - Institute of Critical Care Medicine

has been Awarded an Honorary fellowship in Neurocritical Care by The Society of Neurocritical Care SNCC for his expression of high esteem and recognition of his exemplary service to the field of Neurocritical care in India.



Dr. A. Jaleel Ahmed

B.Sc, MBBS, DCH, MRSH (Lon),

FNNF (Fellowship in Neonatology)., FIAP.,

Consultant Paediatrician & Neonatologist

Being awarded for the community service rendered to newborns and children for the past 35 years.

Dr. S. Kalyanakumari

MD (OG), Dip. Gyn, Endoscopy (Germany), MBA (HA).,

Consultant Obstetrics and Advanced Gynaec Lap Surgeon, Infertility specialist.

for Lecture at the NATIONAL GYNAEC LAPAROSCOPY CONFERENCE

Dr. M. Gobikrishnan MD(GEN MED), DM(NEPH), DrNB(NEPH), ESE (NEPH)

Consultant Nephrologist

Completed MBBS from Stanley Medical College Chennai, MD (General Medicine) from Government Medical College, Thiruvananthapuram. And DM Nephrology from St.John's Medical College Bangalore. He did DrNB Nephrology from the National Board of Examinations in Medical Sciences, New Delhi. Also, he passed European specialty examination in Nephrology on December 2022. Also He worked in KG hospital Coimbatore before joining our Royal Care.

Dr. T. Kanimozhi MBBS, MD, DNB.,

Consultant Pathologist

Completed her MBBS from Rajah Muthiah Medical College, Chidambaram in 2012. Subsequently, She completed her MD in pathology from Coimbatore Medical College, Coimbatore in 2018 and completed DNB pathology, National Board of Examinations in 2019. She worked as a consultant pathologist in Bioline Laboratory, Coimbatore, and as a Tutor and Assistant professor at Nilgiris Medical College and Hospital before joining our Royal Care.

Dr. R.Rajnavitha MBBS, MD(OG), PDFFM., (POST DOCTORAL FELLOWSHIP IN FETAL MEDICINE) FMF-UK (certified) - Consultant in Fetal Medicine

Completed her MBBS from Vinayaka Mission's Kirupananda Variyar Medical College, Salem in 2005. She did MD in Obstetrics And Gynaecology at [PSGIMSR] Coimbatore in 2010. Also, she achieved a Fellowship In Fetal Medicine from Mediscan Systems and Women's Center in 2015. She worked as a Consultant Fetal Medicine at Thamarai Fertility Center, Coimbatore for 8 years and at Thulir Fetal Care Center, Coimbatore before joining our Royal Care.

Dr. P. Arasu MBBS, MEM., (Emergency medicine)

Consultant Emergency Physician

He has completed MBBS from Rajah Muthiah Medical College, Annamalai University, Chidambaram in 2017. worked in emergency departments in multiple private sectors in and around Chennai.Graduated Master in Emergency Medicine from Meenakshi Mission Hospital, Tanjore in July 2023.

Dr. C. Kamalakannan

MBBS, MEM.,(Emergency Medicine)

Consultant Emergency Physician

He Has completed MBBS., From Rajah Muthiah Medical College, Annamalai University Chidambaram in 2017. Worked as a Junior Resident in KMCH Medical College Coimbatore for 3 years.Archived MASTERS IN EMERGENCY MEDICINE In Salem Vinayaka Mission University VIMS Hospital July 2023.

Dr. R. Raaj Vishnu MBBS, MEM.,(CCT-EM)

Consultant Emergency Physician

Completed his MBBS from Chettinad hospital and Research institute Chennai in 2019. He achieved an [M.E.M.(CCT-EM)] from Kovai Medical Center and Hospital, Coimbatore in 2023. He worked as a P.G. resident in Emergency Medicine at Kovai Medical Center and Hospital, Coimbatore before joining our Royal Care.

Dr. Kartthik Shanmugam MD, DM (Clin Haem), MRCP(UK), Dip RCPath(UK)

Consultant Haematologist, Haemato Oncologist & Bone Marrow Transplant Physician

Completed MBBS from PSGIMSR, Coimbatore in 2009. And MD in Pathology from PGIMER, Chandigarh in 2012. He did DM Clinical Haematology from NRSMCH, Kolkata in 2016. He has many unique expertise including national and international experience in treating blood disorders, bone marrow transplant,s and cellular therapy including CAR T cell therapy. He worked as a specialty doctor at Addenbrooke's Hospital, Cambridge University Hospital NHS Trust UK before joining our Royal Care.

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