Report – ALTC 2020

AFFORDABLE LIVER TRANSPLANTS CONCLAVE 2020

BY

THE PRAVIN AGARWAL FOUNDATION

Enabling Liver Care for Children

THEME: PAEDIATRIC LIVER TRANSPLANTS CONCLAVE & COVID-19

DATE: 6th October 2020, Webinar

Context

The Pravin Agarwal Foundation (TPAF), the brainchild of ***Mr Pravin Agarwal, Chairman Sterlite Power Transmission limited and Vice-Chairman Sterlite Technologies Limited*** is a philanthropic organisation dedicated to making paediatric liver transplants accessible, affordable and available for every child in need despite his/her socio-economic-cultural background. Since its inception in 2016, the foundation has helped around 200 kids get a liver transplant done through various fundraising campaigns.

The journey of TPAF started as a fundraiser enabling families and patients to acquire the required funds needed to undergo a liver transplant. With the passage of time team TPAF evolved as an ecosystem enabler making a significant shift in the paediatric liver care space in a short span of time - partnering and collaborating with hospitals, healthcare experts, NGOs, Government organisations, renowned hepatologists, liver transplant surgeons, other funders to facilitate paediatric liver transplants at affordable costs and widen the scope of accessibility of quality care and comfort. Over the past years, TPAF has worked relentlessly to make its mission a reality.

One of the major initiatives taken by TPAF is to organise their annual roundtable meet **Affordable Liver Transplants Conclave (ALTC).** Over the years this roundtable meeting has emerged as a knowledge sharing platform, initiating a dialogue among the various knowledge experts in the fraternity playing a key role in ensuring top-notch liver care and support.

This year keeping the current pandemic in mind, the theme of ALTC 2020 was set as – *"**Paediatric Liver Transplants and COVID-19."***

We did see a heterogeneous mix of experts coming together virtually to disseminate knowledge, discuss strategies, adapt to new norms and facilitate patient support in innovative ways to wade through the current pandemic. The conclave saw doctors and experts from across the globe share significant insights on conducting liver transplant amid the pandemic and extend proper post-operative care.

Conclusions and outcomes of our panel discussions were not only an eye-opener for the panellists and partakers but will also serve as a benchmark for other members of the liver care fraternity to get going in the times of COVID.

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Panel discussions
Topic
Paediatric Liver Transplants in times of COVID-19: Indian and International perspective

Introduction: The human body hardly pauses in its functions and functionalities even if time comes to a standstill due to a pandemic. Healthy bodies thrive but if a disease takes refuge, it depreciates the body without proper care and attention. Liver diseases are no different, more so if it affects a child. Paediatric liver diseases need care and attention, ignored it could do worse to a child's health and his/her future. This only makes it more evident that during such testing times more strict protocols and safety precautions are followed to conduct a transplant.

Our first panel discussion saw leading transplant surgeons and knowledge experts share their views and ways to ensure patient safety during such unprecedented times.

Our panellists	
Dr. Sanjay Rao (Moderator)	Senior Consultant and Department Head of Paediatric Surgery; Solid Organ Transplant Program Narayana Health Hospitals, Bangalore.
Dr. Arvinder S Soin	Chairman and Chief Surgeon at Medanta Liver Transplant Institute; "Padma Shri" recipient for pioneering Liver Transplantations; Founder President of Liver Transplantation Society of India.
Dr. Mohamed Rela	Chairman & Managing Director Dr. Rela Institute & Medical Centre; President-Elect of the ILTS.
Dr. Darius F Mirza	Transplant and HPB Surgeon Apollo Hospitals, Navi Mumbai; Professor of HPB and Transplant Surgery, University Hospital

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	Birmingham; Founder, JEET Transplants.
Dr. Catherine Teh	President Philippine Association of HPB Surgeons; Director, PCS Cancer Commission Surgical Quality Improvement Program; Co-Director Liver Center, National Kidney and Transplant Institute; Chief, Section of HPB Surgery Makati Medical Center; Active Senior Consultant Sections of HPB Surgery, Minimally Invasive Surgery & Surgical Oncology Department of Surgery St Lukes Medical Center; President and Founder Samahang Minamahal ang Atay (Love Liver Foundation).
Dr. Sonal Asthana	Clinical Lead, HPB and Multiorgan Transplant Surgery, Aster Integrated Liver Care (ILC) group, Aster group of Hospitals.

Points of discussion

Indian and International perspective: Guidelines practised in managing paediatric liver transplants during COVID-19

Dr Sanjay Rao, got the discussion started to initiate a dialogue among our panellists to learn how they are ensuring patient safety and keeping COVID-19 at bay.

Precautions, protocols and new norms

Here is what our panellists had to say:

Dr Arvinder Soin, Chairman and Chief Surgeon at Medanta Liver Transplant Institute, pointed out that the pandemic has made it necessary to ensure the donor and recipient are

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free of COVID infection before and after the transplantation and at the same time health care workers are also protected. He mentioned that the precautions and protocols followed are the ones drafted by The Liver Transplant Society of India.

Precautions and protocols followed by The Liver Transplant Society of India

- To quarantine the recipient, donor and the attendant of the patient for at least seven days before the transplantation (initially done for 15 days). This is done to limit the chances of getting a COVID infection before the transplant.
- To ensure the recipient, donor and attendant undergo two tests for COVID-19, performed five days apart. The most recent test is performed 48 hours prior to the transplant. They have to undergo the COVID-19 RT-PCR test known as the reverse transcription-polymerase chain reaction test.
- To ensure the safety of the healthcare workers, they are tested every 5 to 7 days or if suspected to have come in close contact with a COIVD patient or suspect.
- To make sure there was limited or no contact between COVID and non-COVID patients different channels of entry and exit are made within the hospitals. Hospitals follow strict segregation in the treatment and movement of patients with and without COVID infection.
- To ensure utmost safety of doctors, medical healthcare staffs, housekeeping person, technical staff who accompany in surgeries, they are asked to wear full surgical kits (not just PPE kits) with a disposable visor.

Dr Mohammed Rela, Chairman & Managing Director Dr Rela Institute & Medical Centre reassured the importance of the protocols shared by Dr Soin. As all medical centres are complying with those norms as standard recommendations.

Precautions and protocols followed by Dr Rela and his team

- Two tests done to ensure that the recipient, donor and attendant are COVID-19 negative. Since the first test carries a 30 per cent chance of being false negative the second test is done a day before the surgery to ensure there are no traces of the infection.
- Patient, donor and the recipient are quarantined for a week before the surgery. Dr Rela precisely emphasises that if a patient comes in contact with a COVID-19 infected person say three days after the first test, the second test might not show negative but the patient might turn negative two days post-surgery. So quarantine for a week is necessary.
- Since Dr. Rela Institute & Medical Centre is also a COVID centre, the hospital has clear demarcations and split into two sections – COVID and non-COVID sections to avoid transmission of infection.
- Doctors attend to patients on a rotational duty. COVID duty doctors have to undergo home quarantine for 5 days after their scheduled days of shift before they return to resume duty.

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- In case, the recipient, donor or the attendant turns negative in any of the two tests before the scheduled transplantation, the surgery is postponed for three weeks or unless the person turns negative.

Measures taken at International shores

Dr Darius F Mirza, Transplant and HPB Surgeon Apollo Hospitals, Navi Mumbai; Professor of HPB and Transplant Surgery, University Hospital Birmingham gave us an insight on how things were managed at Birmingham amid the pandemic. The challenge that Dr Mirza and doctors in Birmingham had to face is that there was no data on COVID-19 during the initial days.

At Birmingham, where Dr Mirza practised they increased the ICU bed capacity from 100 beds to 450 beds. Recalling the initial days of the pandemic, Dr Mirza said that around 200 COVID patients occupied the ICU beds and another 400-500 regular beds were also occupied by them. It was the peak time that they witnessed in the early days. The pandemic hit the international shores before they could draft protocols and safety rules.

Dr. Catherine Teh, President Philippine Association of HPB Surgeons; Director, PCS Cancer Commission Surgical Quality Improvement Program; Co-Director Liver Center said that in the Philippines there wasn't much activity in the liver transplant landscape since the global lockdown. She also accentuated the fact that the protocols followed in India and other countries are the same as they are International guidelines. She mentioned that at the Philippines they are strict with regards to the swabbing test which is done within one week prior to any contemplated procedure. If the patient turns positive a repeat test is done after a weak.

A protocol they follow in the Philippines is to get the parents of children vaccinated for pneumonia. Another protocol they follow is of contact tracing which is done in every operative procedure.

THE DILEMMA: PERIOPERATIVE MORTALITY & COVID 19

The early data of perioperative mortality attached to COVID-19, disseminated by the **Birmingham-led NIHR Global Research Health Unit on Global Surgery** reported a mortality of 18.9 per cent for elective surgery and 16.9 per cent for minor surgeries. This did infuse fear among doctors while performing surgeries as chances of acquiring a COVID infection irrespective of the surgery remained high. In the context of liver transplants, it meant performing a living donor surgery was highly risky. Birmingham-led NIHR Global Research Health Unit is collecting more data on perioperative infections and mortality at the present

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time, as infection rate has also dropped now given that medical institutions are following stringent recommendations and protocols.

Dr Mirza mentioned that when Birmingham witnessed the peak in the initial phase the world was only coming to terms with this malicious virus and its pangs, mortality was noticed in people suffering from liver diseases. The data collected and contributed for an international survey showed mortality of one post cholecystectomy and a couple of post ripples. This created huge pressure on hospitals to slow down elective adult transplants and continue with just fulminant liver transplants.

CONDUCTING LIVER TRANSPLANTS DURING COVID-19

Did the liver surgeons go ahead with liver transplants during the pandemic? The answer is a big yes. Overcoming fear and triumphing over challenging situations has been a norm for surgeons since time immemorial. Paediatric liver transplants were performed nevertheless. A COVID-19 infection coupled with chronic liver disease can increase the chances of mortality in kids (and adults) hence a liver transplant is such a scenario can be lifesaving.

Rela Institute & Medical Centre carried out around 20 paediatric liver transplants (around 30 adult transplants) in the period of six months of lockdown with no perioperative infection. Medanta Liver Transplant Institute carried out 12 to 15 transplants during the lockdown. Around 20 to 25 transplantations were being conducted in a month by Dr Mirza and his team since June 2020. Aster group of Hospitals performed more than half a dozen surgeries in the four-month period of lockdown.

Dr Sonal Asthana, Clinical Lead, HPB and Multiorgan Transplant Surgery, Aster Integrated Liver Care (ILC) group, Aster group of Hospitals, said that the transplant community never had a problem for testing people for COVID-19 and undertaking surgeries as The Liver Transplant Society of India came out with guidelines quite early during the pandemic to help in smooth operations.

THE COVID SCARE: If the donor or the recipient turns COVID-19 positive

If an infection is acquired by a recipient or a donor it changes the entire transplant set-up.

Donor testing positive: According to Dr Soin, if a donor tests positive he/she is not considered a donor anymore even if they become COVID-19 free after further testing.

Dr Rela mentioned that during the initial phase of the pandemic when the donor tested positive the donor was rejected and the transplant was carried out with another donor. But subsequently, there had been donors who tested positive and the surgery or transplant was

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conducted after three weeks wait time. A chest CT, however, in this case, should show that the donor doesn't have traces of the COVID infection.

Dr Mirza stated that since at Birmingham there are no living donor transplants happening, so a cadaver donor is rejected if tested positive.

Recipient testing positive: Dr Soin sharing a grim picture pointed out that in his knowledge around 15 to 16 patients were tested positive before the transplant and while waiting for the infection to subside seven of them lost their lives. Here, he reinstated the fact that the mortality rate in patients with COVID-19 coupled with chronic liver disease is high, nearly 20 to 30 per cent. So, it is apt to get a transplant done rather than stay with a decompensated chronic liver disease. The mortality rate decreases with a healthy liver even in COVID positive patients.

Recipient turning positive post-transplant: Dr Soin and his team have seen around 20 patients turn COVID positive post-transplant where six were detected early and 14 of them were long term post-transplant patients. Dr Soin mentioned that of the six early cases four of them are doing well and two are in ICU (October 2020) where one is in a critical stage. Of the 14 long term patients, 13 are recovering and one lost the battle to COVID who was suffering from chronic liver disease awaiting a transplant, indicating that it is much safer to get a transplant done than waiting.

TRANSPLANTS AND THE RISK OF ACQUIRING A COVID-19 INFECTION

- Dr. Rela Institute & Medical Centre carried out around 20 paediatric liver transplants (around 30 adult transplants) in the period of six months of lockdown with no perioperative infection, barring a donor who developed the symptoms but recovered later.
- Medanta Liver Transplant Institute had five paediatric liver transplant patients who were COVID positive. Of which three were suffering from chronic liver diseases and the other two were post-transplant patients (long term). However, there were no early post-transplant patients who acquired COVID infection.
- Dr Mirza believes that COVID-19 has not affected patients receiving transplants amid the virus scare. They have also contributed data for another international study on COVID in post-liver transplant patients, where cases are asymptomatic or with mild symptoms of COVID-19 developed late after the transplant. In kids, post-operative COVID-19 infection or any other abnormality was rarely reported.

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MOVING AHEAD WITH COVID-19

Dr Soin, emphasised that testing should be more stringent now. And a donor's welfare needs to be considered and cannot be endangered by ignoring the testing protocols.

- Dr Rela reinstated the importance of testing for COVID-19 for both recipient and donor as most of the time patients infected with COVID-19 are usually asymptomatic so testing them is crucial.
- Dr Catherine Teh believes that moving ahead COVID is going to change the algorithm that has been followed conventionally. She also feels that the precautions that are been followed should be made mandatory going ahead and creating a public education system to make them more disciplined.
- Dr Asthana who had seen three recipients and a donor turn positive within a week stated that RT-PCR tests and CT scans would become a norm moving ahead in the surgical scenario in the intermediate future.

PREPARING FOR THE SECOND WAVE OF THE INFECTION

Dr Mirza stated that currently at Birmingham they are focusing and preparing to fight the second wave with all might, few measures taken are:

- Hospitals buddying with other hospitals and centres to address the issues of bed shortages or total shutdowns.
- Increasing ICU capacity.
- Strategizing what steps need to be taken for short term stoppage or long term stoppage.

Special Talk: Future Directions in paediatric liver transplantations

By

Dr Rohit Kohli, Head of the Division of Paediatric Gastroenterology, Hepatology, and Nutrition at Children's Hospital Los Angeles.

Dr Rohit Kohli's talk was focussed on how to improve the accessibility of liver transplantations for people in need, in the future. However, he also mentions that a future where no child would need a transplant would be an ideal future ahead, taking definite preventive measures and caring well for the organ.

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The objectives of the future directives in paediatric liver transplants are:

- Awareness/Ability
- Assessment
- Accessibility

Awareness: There are numerous diseases which could lead to a liver disorder and necessitate a transplant. Being aware of the disorders is the first step in treating patients with liver diseases. Some of the known causes are:

- Cholestatic liver diseases
- Metabolic diseases where children are born with a defect in processing fat, protein or carbohydrates
- Tumours that could lead to liver cancer
- Acute liver failure
- Cryptogenic, where a cause for the failure cannot be ascertained.

Awareness and ability: Why paediatric liver specialists are needed and how their job is different as compared to the general paediatrician? The job of a paediatric liver specialist is much focussed with a pre-determined objective to identify kids suffering from liver diseases in a shorter span of time and initiate the right treatment. For instance, a paediatric liver surgeon would be more prompt in picking up a condition like an Allagille's syndrome (a genetic disorder which can affect the liver causing abnormalities in bile ducts; and also affect the heart and other parts of the body) where the patient has a typical representation of a triangular-shaped face. They are also the people who would be aware of the new emergent diseases that can pose a threat to a generation, like fatty liver disease, which is a major concern in the Asian subcontinent.

Dr Kohli highlighted the fact that awareness apart, the ability of a liver transplant surgeon also depends on the success and no of transplants undertaken by him/her. Sharing the data from Los Angeles Children's Hospital he mentioned that they performed around 400 paediatric liver transplants till date (since 1998) of which 130 are living donor liver transplant. They are performing 30 odd transplants in a year and 17 transplants have been done amid the pandemic. Putting the ability in context, Dr Kohli mentioned that globally liver transplant surgeons are aiming at a 95+% three-year survival rate which is quite commendable.

Assessment: The biggest challenge for a liver specialist is to do the right assessment and pick out kids who are in need of liver care and attention. One of the common conditions

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that can lead to a liver transplantation in children is biliary atresia (blockage of the ducts carrying bile from liver to gallbladder).

Ways to screen for biliary atresia (BA)

Doing a surgical procedure (Kasai hepatoportoenterostomy) which if done

<60 days of life = 70 per cent successful

>90 days of life = >25 per cent successful

Delay in diagnosis or identifying the symptoms can lead to a late Kasai hepatoportoenterostomy which could be disastrous

Doing new born screening for BA

Conjugated bilirubin concentration: This is a laboratory-based procedure where conjugated bilirubin is measured between 24 to 48 hours after birth to identify kids suffering from BA. Kids with BA will have elevated conjugated bilirubin.

Using stool cards: This concept was pioneered in Taiwan and now is used worldwide to diagnose BA, where the basic colour of the child's stool is looked upon to check for blockage in bile flow. This is a strong methodology of BA screening. However, this is just a screening tool; to confirm any liver defect more secondary testing would be needed.

Screening for other conditions

- Newborn screening for metabolic liver diseases: Metabolic liver disorders disrupt the body's mechanism of metabolism and also interfere with bile acid synthesis. Identifying a metabolic liver condition could be complicated. But a timely screening could prevent deterioration of the liver leading to transplant. One method is to supplement children with cholic acid supplementation which can reverse the need of transplantation in children suffering from metabolic liver disorders.
- Genetic screening: There are many panels that are there to check for genetic defects (testing for more than 60 defects). There are more panels that are in the pipeline to help identify more genetic defects and avoid an end-stage liver failure leading to transplantation.

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Mission ahead

Developing biomarkers: Moving over simple tests, metabolic and genetic tests; the next breakthrough is to look for biomarkers particularly to know about rejection in children who underwent a transplant. Since 50 per cent of children undergoing a liver transplant show signs of rejection in the first year post-transplant, the conventional way to ascertain rejection is a biopsy. But research is being conducted to find out if liquid biopsy can be conducted to look for immune cells in rejection and profile them so that there is no need to conduct a biopsy.

Accessibility

While more centres are opening up and there are more skilled and talented surgeons doing liver transplants with promising outcomes, financial constraints are still a deciding factor for many who require a transplant. That is where crowdfunding plays an important role and organisations like TPAF come in to extend the required help being a major player of the liver care ecosystem.

Panel 2
Topic
Overcoming challenges to PLT patient care in times of COVID-19

Introduction: As COVID-19 becomes inevitable challenges in treating different diseases becomes insurmountable. The same goes for liver transplants or liver diseases as avoiding the conditions could be more catastrophic than fearing a COVID-19 infection. What makes things challenging for surgeons worldwide is conducting a liver transplant with a patient or donor who has contracted a COVID infection.

Our Panellists	
Dr. Neelam Mohan (Moderator)	Director - Department of Paediatric Gastroenterology, Hepatology and Liver Transplantation Medanta Medicity – Gurgaon (Delhi NCR).
Dr. Surender Kumar Mathur	President Zonal Transplantation Coordination Centre Mumbai; Professor Emeritus Dept of General Surgery Seth G S Medical College & KEM Hospital Mumbai; Sr Consultant Surgeon GI, HPB Surgery & Liver Transplantation

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Dr. Bipin Vibhute	Program Director, Center for Organ Transplants, Sahyadri Hospitals (Pune, Nashik & Karad)
Dr. Anurag Shrimal	Lead Consultant – Pancreas & Paediatric Liver Transplantation, Consultant - HPB Surgery, Liver and Pancreas Transplantation Global Hospitals, Mumbai, Maharashtra, India
Ms. Sunayana Arora Singh	CEO of ORGAN (Organ Receiving And Giving Awareness Network) India

Dr Neelam Mohan set the stage for the discussion giving ideal case scenarios to our panellists and asking them to elaborate on them.

Case study 1: Patient – 12-year-old with COVID RT-PCR positive, dengue positive and hepatitis B positive. Acute liver failure with INR 3.5. Hepatic encephalopathy stage II with high enzymes.

Tackling the challenge: Here, the surgeon first needs to do an in-depth analysis if COVID-19 infection is really life-threatening and deteriorating the liver condition or the COVID-19 infection is mild and there without harming the liver. In this scenario, the child was given steroids then put to ventilators. The child responded well to the steroids and subsequently the transplant was carried out.

Case study 2: Liver failure with hepatitis A and COVID-19 positive

Tackling the challenge: According to Dr Anurag Shrimal, in such a case testing for COVID-19 antibodies is necessary, like the IgG and IgM antibodies to know the status of the infection.

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Acute liver failure where medication management is of minimal help, taking the next step in times of COVID becomes a challenge as elective surgeries are at the moment put on hold. Following guidelines, Dr Shrimal stated that in Maharashtra the COVID positive patients cannot be taken for transplant.

Dr S K Mathur, who is an esteemed surgeon and the most experienced in the panel, expressed that if the recipient is COVID positive with fulminant liver it is wise to go for a liver transplant rather than wait for the infection to subside. Where the liver disorders pose to be life-threatening regulation should not come it the way.

THE TAKE AWAY MESSAGE: Should surgeons perform transplants if the recipient is COVID-19 positive? Yes. COVID doesn't affect the liver. One should go ahead and do the transplant as chances of losing a child due to rapid liver failure is more than losing a child to a COVID-19 infection (as previously stated by experts in panel 1).

PRECAUTIONS FOR SURGEONS AND HEALTHCARE WORKERS WHILE OPERATING A COVID-19 POSITIVE RECIPIENT

Dr Bipin Vibhute mentioned that the precautions are taken by surgeons and healthcare workers while transplanting a covid-19 positive recipient is the same as the conventional guidelines followed by doctors otherwise.

- Wearing PPE kits during surgery
- Undergoing COVID test – one before transplant and the other one week after transplant
- Having separate teams to handle COVID cases in the OT and ICU.
- Dividing surgeons and health care workers in rotational shifts for surgeries in ICU and OT

COUNSELLING PARENTS TO UNDERGO LIVER TRANSPLANT DESPITE A COVID INFECTION

Despite the precautions and mass awareness campaigns in place it is really unfortunate that people are still getting infected in hordes. This creates a fear in the mind of parents to give consent for a liver transplant despite their child's deteriorating condition. Dr Mathur, stated that doctors have to make parents understand that especially with fulminant liver failure, delaying the transplant because of a COVID-19 infection isn't a wise decision. The chances of survival are grim. In fact, timely transplantation would increase the chances of survival even in a COVID positive recipient.

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CHALLENGES WHEN THE DONOR TURNS COVID-19 POSITIVE

There are chances of a donor turning positive before the surgeries in such case Dr Mathur stated testing should be done before accepting the organ from a living donor. The donor's clinical test, CT scan and RT-PCR test should turn negative.

CHALLENGES WHEN THE PATIENT TURNS COVID-19 POSITIVE AFTER TRANSPLANT

Dr Shrimal highlighted that kids who got COVID-19 infection after transplant respond well to steroids and supportive management which goes to say that COVID-19 should not make surgeons put a scheduled transplant on hold.

FUNDING AMID THE CORONA PANDEMIC

Ms Sunynana Arora Singh presented a case where around INR 20 lakh was raised for surgery in August 2020 despite the constraints faced during the pandemic, which is quite heartening to hear.

Special talk: Use of telemedicine and tele-education in times of COVID-19

By

Dr Glenn Bonney, Liver, Pancreas and Multi-Organ Transplant surgeon, Research Director- SurgiCAL ProtEomics Laboratory at the National University Hospital, Singapore

Tele-medicine: By definition, telemedicine is a remote diagnosis and treatment of patient through telecommunication technologies. This mode of treatment is rapidly being embraced by the medical fraternity.

In fact, it is thought that since tele-medicine make it convenient and is an inexpensive way of treatment, in-patient visits should become second, third or even last option for meeting patient's needs (NEJM2020). Hence it is not surprising that the industry has seen a 34.7 per cent annual growth rate year-on-year and valued at $48B in 2019. Going ahead there are chances that tele-medicine could become the new norm.

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Importance of tele-medicine during a global pandemic

- It helps in remote and urgent screening of people who are symptomatic. To diagnose, treat and isolate who are potential carriers.
- It helps to protect those who are vulnerable like the recipient and donors by limiting their contact with vulnerable individual and healthcare staff.
- It helps society benefit by reducing footfalls in healthcare facilities. This approach protects healthcare workers and the general public.

The pros and cons of tele-medicine

Listed are few pros and cons of tele-medicine

For patients

- The pros: It reduces cost, saves time and helps avoid long commutes.
- The cons: Losing on clinical examination and physical contact needs a robust IT set-up and access.

For doctors

- The pros: It increases the chances of global outreach and is a time-efficient way of diagnosis.
- The cons: Losing physical and emotional contact with patients.

For hospitals

- The pros: It helps in efficient use of resources
- The cons: Legalities and costs involved

How the entire procedure works

Patients are requested to fill forms with their details and pin codes online. Choose the severity – if it is an emergency and need a hospital visit, suspicious cases are needed to visit a GP for a throat swab and isolate at home for five days, non-suspicious cases are needed to isolate for five days with routine temperature checks. This helps to limit the footfall in hospitals.

The outcomes: Dr Bonney confirms that despite the benefits of telemedicine fewer than 50 per cent patients reject a follow-up tele consultation. The reasons for rejection are varied – few of them still feel a need for a face-to-face consultation, others feel they are fine after

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the first consultation, some remain untraceable, some miss the required tests prescribed and cannot move ahead with the follow-up consultation.

Take-home lessons: In-person consultations are still necessary but implementing tele-medicine has also resulted in efficiency which will become more and more mainstream with time.

Acceptability: It is seen that acceptability is a culture specific

- In west uptake of telemedicine is up to 80 per cent
- In countries with high viral numbers (COVID-19 cases) in-patient consultations have reduced by 90 per cent
- It is also speciality specific, like to discuss the diagnosis and prognosis of a liver transplant becomes complex through telemedicine

Future of telemedicine: There is a great scope for telemedicine to boom in future as even Google search engines have started to map virtual clinics.

Tele-education

Amid the pandemic, tele-education has been a great way to disseminate knowledge through webinars and talks. It has been a way to learn from experts and share knowledge. There has been an exponential increase in webinars.

In fact, to disseminate knowledge and create awareness the two bodies that govern and guide the liver transplant ecosystem –ILTS and IHPBA has conducted many webinars to share information about the same during these unprecedented times.

Benefits of tele-education: It increases global solidarity, accessibility, time efficiency, reduces costs involved, broadens one horizon and leads to an exchange of knowledge and ideas.

The downsides are: The webinars are usually unmoderated, non-peer-reviewed needs robust IT access and support, lack of social support.

Dr Bonney has also initiated **LiverTxSeminars** since June 2020 (with 41 participating countries) which is accessible and free online learning platform to promote education, collaboration and discussion within the transplant community.

Future of tele-education: The next step is to use holograms in medicine, a term coined for it is holomedicine to leverage on the use of mixed reality devices in clinical practice.

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Panel 3
Topic
Adapting post-operative care of PLT recipient and donor to the new normal

Introduction: Care for PLT recipient and donor post-operation is as important as it is before the surgery. The pandemic has made us fearful of getting an infection even without our knowledge and the period post-operation is the most vulnerable one, more reason why discussing care regimen to be followed post-operation becomes necessary at such times.

Our Panellists	
Dr. Lalit Verma (Moderator)	Consultant in Dept of Paediatric Gastroenterology & Hepatology at Wockhardt and Apollo Hospital (New Mumbai)
Dr. Subhash Gupta	Founder Chairman of Max Centre for Liver and Biliary Sciences (CLBS) Max Super Speciality Hospital, Saket, New Delhi
Dr. Rajiv Lochan	Consultant Liver, Pancreas and Abdominal transplant Surgeon, Integrated Liver Care Group, Aster RV & Aster CMI Hospitals, Bangalore
Dr. Sheetal Mahajani	Director – Transplant Hepatology, Department of Gastroenterology, Sahyadri Hospital, Pune; Founder Liver Care Clinic, Pune
Dr. Naresh Shanmugham	Director – Women & Child Health, Paediatric Hepatologist and Gastroenterologist, Dr Rela Institute & Medical Centre, Chennai.

Dr Lalit Verma, set the stage for the panel discussion by leading the talk on guidelines and practises to be followed regarding home-care after discharge.

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GUIDELINES TO BE FOLLOWED POST-TRANSPLANT

According to Dr Subhas Gupta, the pandemic made it necessary for surgeons not only to educate the patients to follow proper protocols to avoid a COVID infection post-surgery but ensure minimal post-transplant complications.

Ways to minimalize the chances of acquiring an infection post-transplant

- Keep the patients for longer than usual in the hospital after surgery to ensure they have no pending issues to be resolved which could necessitate readmission.
- Educate them about medications and doses and explain them to share the progress and medication chart through WhatsApp limiting in-patient consultation.
- If readmission is needed they are sent to the liver care unit directly where all sample collection happens with minimal interaction possible in the hospital.
- It is necessary to have a local or family paediatrician in loop throughout the pre and post-transplant phase so that minor health scares can be sorted without coming to the hospital.
- Ensure proper availability of drugs. Instruct medical co-ordinators to be in touch with patients to keep a tab on post-operative progress.
- Dr Naresh mentioned that post-transplant follow-up teleconsultations done are safer as it limits exposure and risks of getting an infection. He also feels that for any sample collection the patient should not risk a hospital visit rather take help of the in-house collection facilities of the centres.
- Dr Mahajani said to limit exposure only essential visits are encouraged. Else patients are counselled and monitored over WhatsApp groups and other mediums to limit exposure.

CHALLENGES FACED POST-TRANSPLANT

Dr Lochan pointed out that one of the biggest challenging factors especially in rural India is to keep the donor and recipient isolated from the society as they rely more on social support. Devoid of telecommunication or other means to survive post-transplant their dependency on society increases. Keeping a tab on these patients was most challenging. However, proper patient education and awareness drives did help.

Since the need of medications and drugs post-transplant is crucial, a dearth of the same during the pandemic stood to be worrisome. This problem was addressed by various NGOs and rotary clubs which came forward to help.

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LIVING WITH COVID POST-TRANSPLANT

- A COVID infection in the post-operative period isn't life-threatening in most cases; there is no reason to fret too much.
- Wearing a mask for paediatric patients and families while travelling is crucial.
- Avoid risking unnecessary hospital visits as even being in the non-covid area could be of risk. Anyone can be a carrier, so think twice before going to the hospital. Attend appointments on time, meet the doctor and leave.
- Social distancing, wearing a mask, hand hygiene, making use of telemedicine should become a priority.

Panel 4
Topic
Opportunities to bring down the cost of PLT for the patient

Introduction: While the medical fraternity has made a lot of advances in the field of liver care and transplant the cost related to pre and post-transplant still remains a concern. Covering the cost of liver transplant surgeries through crowdfunding programs is just one part of the story, continuing the aftercare for a prolonged period is still a challenge, what with high costs of drugs, medication and diagnostics. Our panellists and speakers put forth innovative strategies to help reduce the cost of PLT patients post-transplant to make aftercare sustainable for families from every stratum of society.

Our Panellists	
Mr Ayan Chatterjee (Moderator)	Honorary operations advisor of The Pravin Agarwal Foundation and currently heading the Sterlite EDIndia Foundation.
Dr. Shenoy Robinson	CII Technical Committee on Health; Director, Catex Health; Advisor, Board Of RishiHood University; Advisor - PE Investors & Top Consulting firms.
Mr. Shridhar Hanchinal	Director of MOHAN Foundation a not-for-profit organization
Dr Sharat Varma	Principal Consultant & Head Paediatric Gastroenterology, Hepatology and Liver

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	Transplantation at the Centre for Liver and Biliary Sciences (CLBS), Max hospitals Delhi
Mr. Anoj Viswanathan	Co-founder and President of Milaap
Ms. Anita Puranik	Founder & CEO Metamagics Computing Pvt. Ltd

Our moderator Mr Ayan Chatterjee got the ball rolling initiating a dialogue among various thought leaders to cut down on costs.

WAYS TO BRING DOWN THE COST IN PRE AND POST-TRANSPLANT PHASE:

Commenting on reducing the costs Dr Shenoy said:

- For reducing costs involved in both the phases, one thing that needs to be addressed is to increase scalability. When things are available in abundance, it is easier to cut down on costs. If there are too many patients in waitlist to get a transplant it is sensible to access organs from the cadaver pool rather than wasting them.
- Another way to reduce costs is for the entire liver care ecosystem to grow and evolve in an integrated fashion, rather than hospitals and healthcare establishments growing exponentially, individually. This means for patients, having access to consultation and diagnosis widens.
- To cut down on costs, there is a need to create a bigger platform for patient outreach through telemedicine. This medium of telemedicine should not just be considered for teleconsultation but should evolve to be much bigger to cater to patient needs pre-operatively and post-transplant.

HOW TO STANDARDIZED CROWDFUNDING

Anuj Vishwanathan sharing his views on crowdfunding standardization commented:

- There is a need for crowdfunding platforms to be as transparent as possible so a donor can make an informed decision when it comes to contributing.
- Milap, as a platform, has raised money for over 80k patients in the last six years. The team has been proactively identifying if the patients who reach out to them are real and in dire need of help so as to know how genuine the need is.

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- Tools are provided for people to raise funds free of cost on the platform to initiate transparency.
- Donors are able to interact and ask questions if needed about the funding or the campaign they are supporting.
- For patients who come from financially disadvantaged background, Milap goes the extra mile telling their story. This is where there are certain guidelines involved in standardizing the amount that needs to be raised for the surgery.

WAYS TO SUSTAIN THE TREATMENTS IN A LONG-TERM COURSE

Commenting on the same Dr Shridhar Hanchinal stated:

- One thing that has helped the public, by and large, is the government policies under NPPA (National Pharmaceutical Pricing Authority) where prices of various drugs have been rationalised. So, as compared to 10 years back the costs of the drugs have been reduced.
- But when it comes to transplant patients who need lifelong support for medication and drugs there needs to be a consistency in funding even after the transplant.
- It is important for pharma companies who play a major role in the transplant space to have patient support programs. This support group should help patient acquire drugs needed and cover diagnostics even if partially.
- Adherence for counselling should be there to support transplant patients in the long-term scenario to continue with a healthy way of life as complacency could lead to consequences where the cost of therapy could increase.
- There should also be some perks for patients, like receiving medicines free of cost once, after a period of three or four years. This would make patients adhere to medications and treatments.

MAKING PATIENTS OVERALL EXPERIENCE COST-EFFECTIVE

Dr Shenoy, bringing in his expertise in this segment of the talk stated that:

There are two kinds of costs that need to be taken into consideration while talking about bringing down the cost for patients – direct cost and indirect cost. The direct costs involved – the cost of surgery, medications and diagnostics. The indirect costs are the costs of the hospital. In transplant cases, direct costs are very high. These can be reduced through third-party interventions like crowdsource tests and medications through NGOs would bring down costs in a big way.

Thank You.

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