



The Pravin Agarwal Foundation (TPAF) organized **Asia's biggest Paediatric Liver Transplant conclave – Affordable Liver Transplants Conclave (ALTC) 2021**, on 18th October as a webinar which was streamed live on YouTube.

Every year TPAF organizes an annual roundtable titled '*Affordable Liver Transplants Conclave*' to initiate a dialogue between the various members of the liver transplant ecosystem.

The theme for this year was **Current Developments in Paediatric Liver Transplantations (PLTs)**.

The Founder's Statement

"This platform has emerged as a learning and knowledge sharing platform for all of us at TPAF we are aiming to support 1000 lives in a year and help paediatric liver patients get a new lease of life. A healthy child with a healthy liver can do wonders for society and the nation," **commented Mr. Pravin Agarwal, the founder of The Pravin Agarwal foundation, Chairman, Sterlite Power Transmission Limited and Vice Chairman, Sterlite Technologies Limited.**

The conclave initiated three panel discussions and two special talks to discuss the current developments in the paediatric liver transplants and ways to improve outcomes of patients.

Panel 1: Topic - *Management of COVID-19 in children with liver disease and liver transplant*

Moderator	
Dr. Neelam Mohan	Director Department of Paediatric Gastroenterology, Hepatology & Liver Transplantation, Medanta – The Medicity Hospital, Gurgaon
Panellists	
Dr. Anurag Shrimal	Lead Consultant - Pancreas and Paediatric Liver Transplantation, Consultant - HPB, Liver & Pancreas Transplant Surgery, Global Hospitals, Mumbai
Dr. Naresh Shanmugam	Director- Women and Child Health, Senior consultant & Clinical Lead, Paediatric Liver & Gastroenterology, Dr. Rela Institute & Medical Centre, Chennai
Dr. Sudhindran S	Clinical Professor and Chief Transplant Surgeon, Department of Gastrointestinal Surgery and Solid Organ Transplantation, Amrita Institute of Medical Sciences, Kochi

The major takeaways from the sessions:

The COVID-19 & effect on children population: The sero-surveillance reports say that COVID19 infection in children above ten years of age occurs in a similar frequency to that of adults, however, the infection is less severe in children than adults. Occasionally, the infection is asymptomatic or mildly symptomatic in the majority. It is uncommon to have moderate to severe covid.

COVID-19 and children with morbidities and liver diseases: Children with co-morbid conditions have more severe manifestations and poorer outcomes. The virus is associated with significant morbidity and mortality in patients with liver disease as compared to the general population. Increased risk is there for people with cirrhosis [liver scarring].

Pre-existing liver disease & COVID-19: People with pre-existing liver disease (chronic liver disease, cirrhosis, or related complications) who were diagnosed with COVID-19 are at higher risk of death than people without pre-existing LD.

Caregivers & kids with chronic liver disease in the COVID times: Parents of kids who suffer from one or the other form of chronic liver disease should vaccinate themselves on priority to reduce the incidences of viral transmission from parent to child. Parents should never tamper with ongoing steroid medications of kids to treat a COVID-19 infection, but reach out to the doctor to know what is the best practice to be followed.

Global mortality numbers in children with liver disease: Studies have pointed out that children with A cirrhosis and COVID-19 disease have a mortality of 17.3%. In comparison, those with B & C cirrhosis and COVID-19 have a mortality of 41.2 %, and children with liver transplants and COVID-19 have 18.2%.

Mortality and children with liver disease & COVID-19, Indian data: Despite the increasing numbers of COVID-19 cases, there have not been high mortality in children with COVID-19 and liver disease. While there is hospitalisation due to COVID even in children with liver disease, the symptoms subsided with routine treatment and following the protocols. It was seen that the infection post-transplant was not as bad as it was expected or reported elsewhere.

Obesity in kids & COVID-19 infection: Obese kids are at risk of developing severe type of COVID-19 infection. Data suggests that prevalence of metabolic associated fatty liver disease is 7.6 % in non-obese kids and 34.2 % in obese kids. In fact, obesity increases the risk of a COVID-19 infection by 6-fold

Selecting a donor (recovered from COVID) for a paediatric liver patient: For PLT, a live donor can be taken (a part of the organ) after 4 weeks in case of mild COVID and 3 months in case of severe infection. In case of a deceased donor, the organ can be taken between 3 weeks to 3 months.

Vaccination & kids with liver disease: Children with chronic liver disease and liver transplant should be vaccinated on a priority basis. Especially kids who have undergone a liver transplant as their immunity is low.

Panel 2: Topic - [Exploring new techniques to overcome donor shortage for PLTs](#)

Moderator	
Dr. Sonal Asthana	Senior Consultant, Department of Hepatobiliary Surgery and Multi-organ Transplantation, Aster CMI Hospital, Bangalore
Panellists	
Dr. Vivek Vij	Founder & Chairman, Liver Transplant, Hepato-Pancreato-Biliary Surgery, Fortis Healthcare Limited (Group Level)
Dr. Hynek Mergental	Consultant Surgeon at the Liver Unit at the Queen Elizabeth Hospital and honorary Senior Lecturer at the University of Birmingham, UK
Dr. Prashant Bhangui	Associate Director Hepatobiliary Surgery and Liver Transplantation Surgery, Medanta-The Medicity Hospital, Gurgaon

The major takeaways from the session:

Paediatric liver transplants and its challenges: Paediatric load in a country like India is high, and the transplants done are very low. Parents in India aren't keen on getting a liver transplant done for their child. There could be two reasons for this – in our country we lack good paediatric programs or they are unaware of Paediatric Liver Transplant outcomes. Another hurdle that parents face is also of the funds – Paediatric Liver Transplant also needs monetary support.

PLTs Vs adult liver transplants: As compared to adult transplantation, PLT is much safer. One needs to take a chunk of liver from an adult for a paediatric liver transplant. In fact, a very small chunk of the liver is taken out for the purpose, just 10-20 percent. Therefore, the complications are much less, and the procedure is relatively safe.

New technique to boost PLTs-Machine perfusion: Machine perfusion is a technique used in organ transplantation to preserve the organs that are to be transplanted. Machine perfusion has various forms and can be categorised according to the temperature of the perfusate: cold and warm.

Machine perfusion and future of PLTs: In the future one can hope for extended preservation times that will open new horizons in organ sharing. Improved logistics will allow optimal transplant timing and on-machine splitting may prevent technical complications too.

Challenges for finding a donor for PLTs in India: The Indian data suggests that living donor liver transplant (2017-21) in the paediatric population was just 18 % compared to the adult population, which records 82%. Also, deceased donor liver transplant corresponds to 6 % of the Paediatric Liver Transplant compared to 94% in adults. There is a long waitlist for the paediatric pool because of the scarcity of size-matched whole grafts harvested from young size-matched donors. The challenge for the surgeons is to place a paediatric liver patient on the waitlist as they know probably the recipient won't get an ideal liver.

Panel 3: Topic - Promotion of Wellness amongst PLT patients and their families

Moderator	
Mr. Ayan Chatterjee	Head – CSR Sterlite Power Group, EdIndia Foundation, Honorary Strategic advisor for TPAF
Panellists	
Dr. Smita Malhotra	Consultant, Paediatric Gastroenterology-Hepatology, Indraprastha Apollo Hospitals, New Delhi
Ms. Sreemathy Venkatraman	Chief Clinical Dietitian, BRAINS Hospital, Bangalore, National Office Bearer- Central committee-IAPEN-INDIA, Executive Director- Dysphagia INDIA
Ms. Jaya Jairam	Project Director, MOHAN Foundation, Mumbai

The major takeaways from the session:

Post-transplant challenges and tips to overcome the same: It is essential to make the parents or the caregivers understand that transplant is just one part of the story. Post-operative care and support is also a considerable challenge. Once the transplant is done, they have to take care of the medications and tests before follow-ups to ensure a patient's well-being. This becomes a huge financial burden for the family. In addition, funds have to be arranged for post-operative care, as the cost of medications and tests is an added stress for many families.

Some strategies that can help to lessen this burden are

- Funding through NGOs or organisations
- Compliance with medications
- Practicing good hygiene to avoid reinfection and hospitalisation.

Nutrition & post-operative care: Malnutrition is prevalent among the Indian paediatric population on a large scale. It also affects kids who are suffering from liver diseases or get a transplant done. One needs to take extra care of a child post-transplant, especially if the kid is suffering from malnutrition. Parents or caregivers need to be counselled to give kids nutrient-dense foods in the right proportion.

Nutritional challenges caregivers face post PLT: There could be behavioural eating problems due to lack of appetite, pain or general irritability after the surgery. Parents need to be counselled to help the child overcome these hurdles to ensure proper intake of food. During follow-ups, a proper body analysis should be done to know if the child lacks any kind of nutritional support.

Outcomes that parents should be watchful of post PLT: The major challenge is to keep the child in the range of optimal weight without compromising on other parameters. It is often seen that a child is either gaining too much weight or too little weight post-transplant. Both of these scenarios could be harmful for the child. This often happens if the child is missing out on oral supplements or having the wrong kind of foods like raw foods (that can increase chances of infections), not following proper hygiene guidelines etc.

The need of a support group: Support groups are like the moral support system that exists to help patients and caregivers know that they aren't alone. While there are a lot of experts and advanced medical help all around the corner, the role of the support groups is to complement the efforts taken by every stakeholder in the ecosystem and consolidate the support and care provided. There is a lot that people have to go through after a transplant. Many times, support group members help each other make some informed decisions about post-operative care. Support groups are like social network support or community support that makes survival and healing much easier and more stress-free.

Special Talk: [Impact of a mandatory split liver policy in Italy](#)

Speaker: Dr. Roberta Angelico, MD, PhD, FEBS, HPB and Transplant Unit, Department of Surgery, University of Rome Tor Vergata, Rome, Italy

Major takeaways from the session:

While there is no split liver policy in India, Italy has one in place, and in the recent past, the outcomes in context to paediatric liver transplants have been excellent.

Split liver transplant (STL) is a surgical procedure where a healthy liver from a deceased donor (cadaver donor) is split into - left lateral and a right extended graft for one paediatric and adult recipient. This procedure has primarily helped cut down on wait time for patients who urgently need a liver for survival.

The standard technique for SLT is a surgical procedure where a liver graft from a deceased donor can be divided into two recipients, including LLS to a child and ERG to an adult recipient.

Why the need for a split liver policy?

The policy came into existence due to the following challenges:

- *Difficulty to find size-match grafts for small-size transplant candidates*
- *Long-time awaiting LT for paediatric recipients*
- *High paediatric LT mortality*

Choosing the right donor: Most countries that have a split liver policy in place have drafted their criteria. The younger the donor, the better the outcomes. Usually, a donor less than 60 years of age, with low BMI, near-normal liver function tests and less than 5 days ICU with low inotropic support are considered good donors.

Impact of split liver policy:

- In Italy, the maximisation of SPLIT LIVER allocation policy, integrated with LDLT activity, almost eliminates the paediatric LT waiting list mortality.
- The SPLIT LIVER program needs a continuous adaptation of organ allocation rules, according to the changing of the donor population and adult liver allocation.

Special talk: [Setting up a screening program for paediatric liver disease](#)

Speaker: Anil B Jalan, MD DCH MCPS, Director and Chief Scientific Research Officer NIRMAN (Navi Mumbai Institute of Research in Mental and Neurological Handicap) Metabolic Clinic, Navi Mumbai

Major takeaways from the session:

The metabolic problem associated with the liver could be of many kinds. However, broadly we can divide them into two categories:

1. Where the liver is dysfunctional or where the liver structure is disturbed, the liver cells fail to function to the optimum, which might need a targeted approach or treatment; failing to respond to it can lead to liver transplant.
2. Another kind of problem might be the involvement of the liver because of the enzyme function. In this scenario, the structure and cells of the liver are standard, but the enzymes secreted lead to liver disease. This group of diseases can also be treated with medication and diet, but a transplant might be needed if there is no response to the treatment.

Screening for metabolic liver diseases right after birth is essential to nip the problem in the bud and ensure that the child is saved from the clutches of liver diseases or a timely transplant is done to improve the quality of life.

How should one screen/check for these disorders?

Whenever there is a symptomatic child for metabolic liver disease, the following screening tests can be done, to confirm a diagnosis:

- Galactosemia screen
- Tyrosinemia profile
- HPLC profile
- FAOD profile
- Urea cycle screen
- Total bile acid
- Storage Dis Screen

The samples needed for these screening approaches:

- 2 ml heparinized blood
- 2 ml EDTA blood
- 3 ml serum
- 10-15 ml urine

Sometimes, additional studies might also be needed to confirm the diagnosis, such as CDG screening, bile acid isomers, genetic studies, liver biopsies, etc.

Lessons learnt:

- In India, far more less transplants are done and the number of patients who need a transplant are too high.
- There is a lack of awareness among the majority of people in India regarding the outcomes of PLTs.
- India needs more advanced techniques and technologies to improve outcomes of PLTs. Having some national guidelines might help in this case.
- The post-transplant financial burden on a family is a factor that needs some thoughts and support too.
- Vaccinations (to fight COVID-19) in kids with PLTs should be a priority.

Click the link to watch the whole webinar:

<https://www.youtube.com/watch?v=XHFWFSQWSP4>

