The Doctor Who Put Malatya on the World Map

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We're in Arguvan for the 17th International Arguvan Folk Song Festival. Ahead of the festival, we're focusing on the center where a physician from Arguvan shaped global medicine. We spoke with Prof. Dr. Sezai Yılmaz, Director of the Liver Institute at İnönü University in Malatya, about Türkiye's journey to second place in the world in living donor liver transplantation, the algorithmic matching model established with Boston College, and the details of the crossover transplant system. – Zeynep Aktaş

Consider a hospital in Malatya; it has achieved the highest numbers not only in Türkiye but also in Europe for living donor liver transplants. Moreover, by implementing an algorithm developed at Boston College, this center has become a global model for the crossover transplant system. Professor Dr. Sezai Yılmaz, head of the İnönü University Liver Institute, says, "We are currently capable of performing seven crossover liver transplants simultaneously; it's an orchestra's work." We wanted to hear firsthand the effort, operation, and transformation behind a system built on numbers.

Mr. Sezai, you perform nearly 300 liver transplants a year in Malatya. We're talking about one of the busiest centers in Europe. How is this possible?

In fact, this isn't just a medical issue. It's a story of construction. A journey that began from scratch, was plagued by shortcomings, yet never gave up. When I arrived from Ankara, nothing was ready. But we knew our goal: to establish Türkiye's best liver transplant center in Malatya.

Why wasn't it Ankara or Istanbul or abroad?

When I left the comforts of the big city and returned, everyone asked the same question. But for me, what mattered was establishing a structure, developing a model. Perhaps it would have been easier if I had done this elsewhere. But here, in my hometown, it would have had meaning. And I chose that meaning.

So how did the development happen?

The first few days were quite challenging. The equipment, the staff, the patient follow-up... But we persevered. We assembled a team, provided training, and worked day and night. Over time, this discipline evolved into a system. Today, we can perform seven-way crossover liver transplants simultaneously with a team of 20-30 specialists. No other center in the world has achieved this.

How many liver transplants are performed annually at your center?

We perform approximately 300 liver transplants. I believe this number will reach 400 thanks to crossover liver transplants. No other center in Türkiye or Europe has achieved this number. We are one of only a few centers in the world.

You said seven-way crossover transplant at the same time, what does that mean?

So, fourteen people—seven recipients and seven donors—are undergoing surgery simultaneously for a crossover liver transplant. Think of it like an orchestra. Everyone on our team must have a clear role, and their timing must be perfect. Otherwise, this won't work.

You're talking about cross-transplantation. Could you elaborate a bit?

Cross-transplantation is a crucial method, especially in living donor liver transplantation. There's a serious shortage of organ donations in Türkiye. Only 10-15% of the need can be met through cadavers. Consequently, the majority of patients are forced to undergo a living donor transplant. However, not everyone has a relative who can donate a liver. Compatibility is difficult.

Then what happens?

This is where the system we call crossover transplantation comes into play. Let's say a patient and their donor are incompatible. Similarly, another patient and their donor are incompatible. But when these two pairs are crossed, one donor can be a match for the other patient, and the other donor can be a match for the first patient. This gives both patients a chance. We call this double crossover. This method can save many lives.

Are these transmitters paired randomly?

No, it's entirely scientifically based. Two Turkish academics from Boston College, Prof. Tayfun Sönmez and Prof. Utku Ünver, developed an algorithm for this purpose. It's called the Banu Bedestenci Sönmez Crossover Transplant Algorithm. Through our collaboration, we began implementing this model at our center and saw immediate results. Thanks to the algorithm, we've performed 279 crossover liver transplants in the last three years. This represents a significant medical leap forward for us.

Is 279 crossover liver transplants in three years too many?

Yes. This is a very significant figure. Let me put it this way: India—the country that performs the most crossover liver transplants after Turkey—has performed only 259 crossover liver transplants in 15 years across nine centers. We performed this in just three years, at our institute alone. We will soon surpass 300.

I want to return to the collaboration with Boston College that you mentioned earlier . How did this scientific collaboration begin?

It's actually a very human connection. We performed five simultaneous transplants in 2019. It was reported in the press. Then, Professor Tayfun Sönmez came to Malatya. He said, "We can take this model even further with the algorithm we developed." They donated this algorithm, which they designed together with Professor Utku Ünver, to our center. Thus, thanks to this scientific collaboration with Boston College, the system became applicable in our hospital.

The name of the algorithm is striking. Why "Banu Bedestenci Sönmez"?

The algorithm's name is actually a symbol of loyalty. Banu Bedestenci Sönmez devotedly supported her husband Tayfun Hocan's work for years, but sadly succumbed to cancer in the United States. We know that in using this algorithm, we are carrying not only a scientific method but also a memory. The algorithm, along with its name, also carries a meaning that touches human life.

Where else is algorithm used?

It's actually quite common in kidney transplants. But few centers implement this methodology in liver transplants. A national pilot program encompassing 15 centers was launched in the US in January 2023. Eleven months later, no liver transplants had been performed, and the program was discontinued. We've been implementing it systematically for three years.

From what I understand, the cross-transfer system is quite complex. How is such an infrastructure sustainable?

Liver transplants performed at public universities are publicly funded. This provides a significant advantage in terms of both the continuity and accessibility of the process. This allows us to meet the demand, particularly for living donor transplants. Procedures related to patients from abroad are subject to separate evaluation.

So how do these successes resonate around the world?

There's high interest internationally. Our operations using the crossover transplant model are attracting attention in the scientific community. Collaborations with colleagues abroad further reinforce this interest. In Türkiye, we sometimes feel these achievements aren't as visible as they should be. But our main motivation is to reach more patients, provide a cure, and continuously improve this model.

What did you gain from staying in Malatya?

This city gave me not only a field of work but also a responsibility. It would have been easier to move to larger centers, but we chose the difficult path. Through the challenges, we built a stronger team and a more resilient structure. Where we are today was made possible not

just by the efforts of one physician, but also by the faith of a city and the determination of a team.