

Transplantation in Turkey and region

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The article provides insight into significant milestones in the history of organ transplantation in Turkey and region.

In 1975, we were the first in Turkey to perform living-related kidney transplantation and, in 1978, deceased-donor kidney transplantation, using an organ supplied by Eurotransplant. In 1979, the law on harvesting, storage, grafting, and transplantation of organs and tissues was enacted. The first local deceased-donor kidney transplantation was performed by our team in 1979. The first successful deceased-donor liver transplantation, which was a groundbreaking surgery procedure for Turkey, the Middle East and Northern Africa, was carried out by our team in 1988. In 1990, we were the first not only in Turkey but also in the Middle East region as well as Europe to perform pediatric living-related segmental liver transplantation. One month later, an adult-to-adult living-related liver transplant (a left lobe) was successfully performed for the first time in the history of organ transplantation. On May 16, 1992, we carried out the first combined liver-kidney transplantation from a living-related donor, which was the first operation of its kind in the world. Between November 1975 and October 2021, we performed 3,256 kidney transplantations at Hacettepe University Hospitals. Since 1988 to date, we have carried out 695 liver transplantations at Baskent University. According to the registry of the Ministry of Health, from 2002 to 2021, 46,115 kidney transplants were performed nationwide, as compared with 17,868 liver transplants, 1,153 heart transplants and 198 pancreas transplants. In 2001, the Ministry of Health established the National Coordination Center as an umbrella organization to promote transplantation activities, especially deceased-donor organ procurement. Despite constantly increasing overall living-donor transplant rate across the country, overall deceased-donor transplant rate is still far below the desired level.

KEYWORDS

organ transplantation, history of transplantation, transplant tourism.

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Transplantation rate may be considered as one of the indicators closely connected with a country's development level. The successful melding of legal, ethical, medical, social, psychological, technological, economical, and religious aspects is mandatory for any transplantation organization. It is nearly impossible to create or run an effective system without regard for all these components. Like all similar programs in the world, transplantation activities in Turkey began with operations that broke new ground [1, 2]. The long journey to an established system was made in baby steps with the initiation of nationwide hemodialysis programs, access to and provision of immunosuppressive drugs, technological improvements in tissue typing, advancements in graft imaging and immunosuppressive drug

monitoring, work on legislation, education (including religious aspect of the issue) and coordination of medical staff, legal authorities, media and the Turkish public, establishment of an intercity organ sharing program, and organization of national and international scientific meetings and societies.

History and development of organ transplantation in Turkey

In Turkey, solid organ transplantation began with two heart transplants in 1969. On November 22, 1968, Dr. Kemal Beyazit attempted the first heart transplant in Turkey at Ankara Yüksek İhtisas Hospital. Just 5 days later, on November 27, 1968, the second attempt was carried out by Dr. Siyami

Ersek in Istanbul. The first patient survived 18 hours, while the second one survived 36 hours.

In 1970, a transplantation research program was established at the Department of General Surgery at Hacettepe University Hospitals and, being a third-year resident, I became one of the members of the surgical team. Experimental liver transplantations were performed in pigs and then in dogs [3] (Fig. 1, 2).

On November 3, 1975, we performed the first successful living-related renal transplantation in Turkey, with a kidney donated from a mother to her 12-year-old son [4–6] (Fig. 3). It is important to note that there was no legislation governing organ transplantation in Turkey at that time.

This was followed by the first deceased-donor kidney transplantation, using an organ supplied by Eurotransplant, which was carried out by our team at Hacettepe University Hospitals on October 10, 1978 (Fig. 4, 5). Throughout the 1970s, the only option for the transplant candidates on the national waiting list was to receive a graft from a first-degree

living-related donor. There were plenty of patients but not enough organs. In an attempt to make more deceased-donor organs available to the Turkish patients, our team established cooperation with the international networks, including the South Eastern Organ Procurement Foundation (SEOPF) (Richmond, VA, USA) and the Eurotransplant Foundation (Leiden, The Netherlands) [7–9]. Back then, nobody was using deceased kidneys with a cold ischemia time more than 12 hours. The organs received from the organ procurement foundations were delivered to us with a cold ischemia time of more than 24 hours and were also anatomically problematic. However, these kidneys were used with a high success rate. Deceased-donor kidney transplantations with prolonged cold ischemia time, which were performed by our team in the 1970s, added a new dimension to this branch of surgery, and reports about renal transplantations with a cold ischemia time more than 100 hours began to appear in the literature throughout the world [10, 11].



Hacettepe University Hospital



Dr. Mehmet Haberal



First experiment in pigs



Final successful experiment in dogs (post-op 24 hours)

Figure 1. **Experimental animal studies, Hacettepe University Hospitals, 1970s**

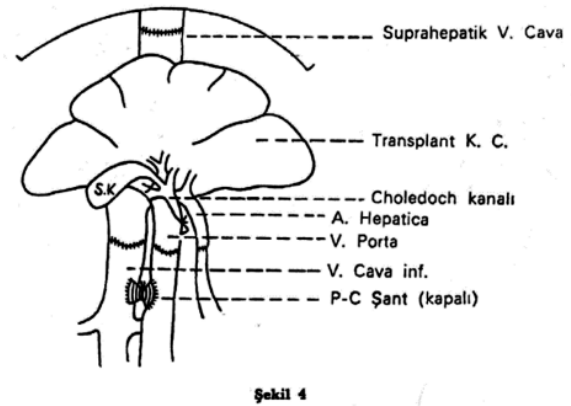
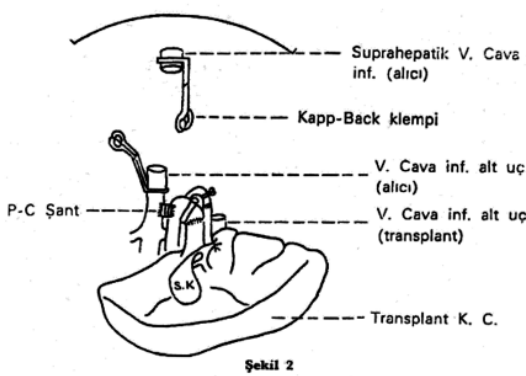
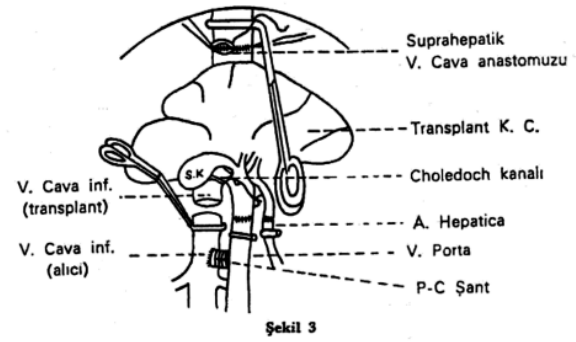
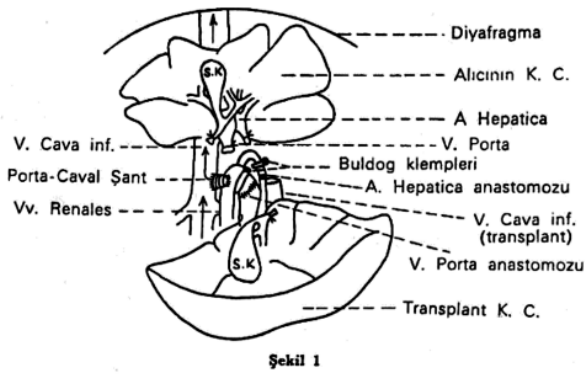


Figure 2. **Experimental orthotopic liver transplantation in dogs**



Senior Surgical Team, Left to Right: Prof. Gülnaz Arslan, Prof. Nevzat Bilgin, Prof. Mehmet Haberal, Prof. Mualla Karamehmetoğlu, Prof. Nebil Büyükpamukçu

Mürvet Çalışkan (mother — donor) Bahtiyar Çalışkan (son — recipient)

Figure 3. **The first successful living-related renal transplantation in Turkey, Hacettepe University Hospitals**

During the early period in the history of organ transplantation, very few people were aware of organ transplants. The fact that there was no law in Turkey governing organ donation was a major hurdle to be overcome. News and information about deceased-donor kidney transplants were transmitted to the public by means of television, radio, and the press. People were thus able to see the results

of the surgeries through images of and interviews with organ recipients who were once again able to lead normal healthy lives. I began working with the government authorities to raise public awareness about the benefits of deceased-donation and the related challenges that health professionals face. In addition, I began to cooperate with the media and various charity organizations as well as with



Erol Emeksizoglu (recipient)

Figure 4. The first successful deceased-donor kidney transplantation (the organ supplied by Eurotransplant) in Turkey, Hacettepe University Hospitals

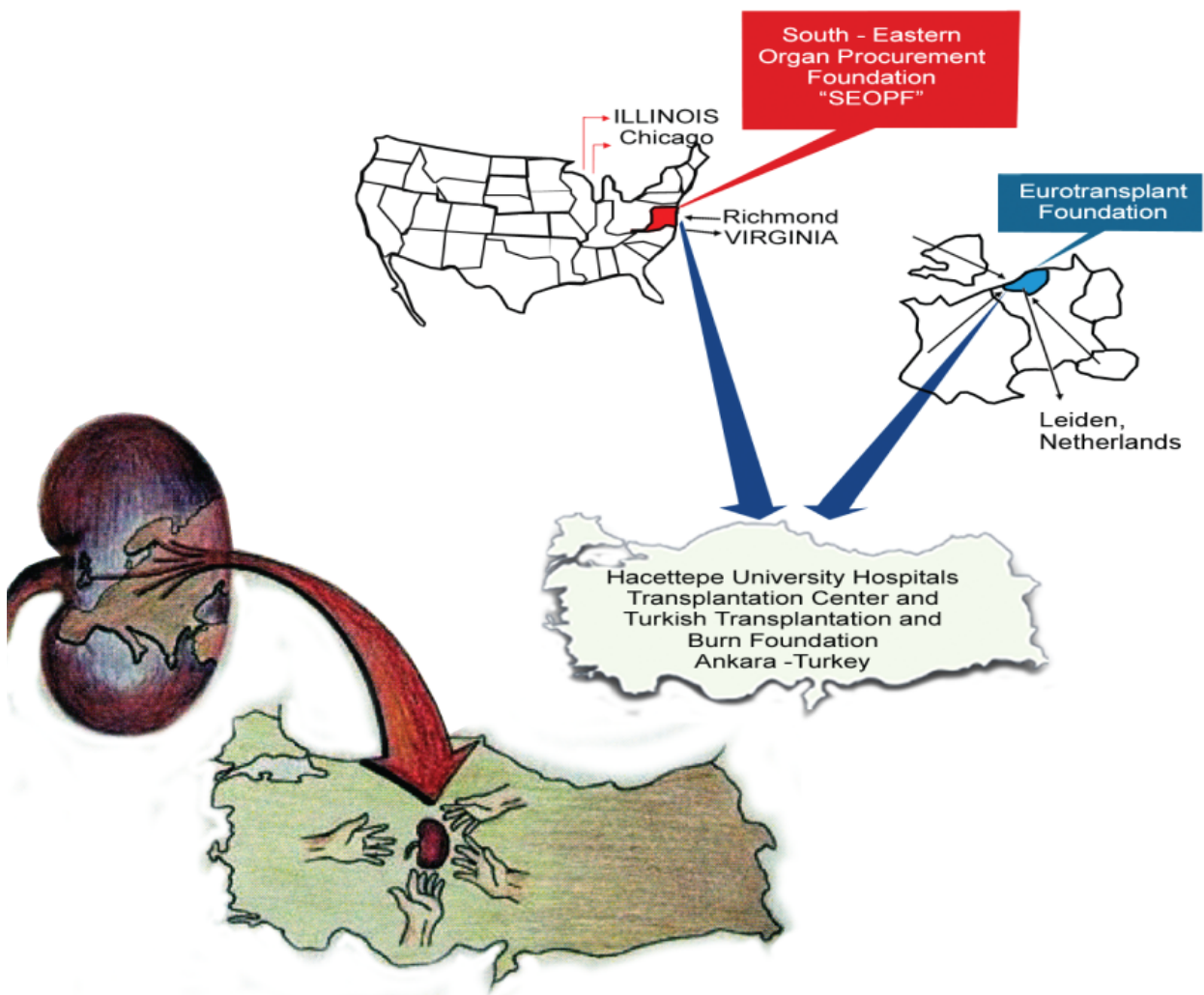


Figure 5. Donation by Eurotransplant and South-Eastern Organ Procurement Foundation

Article 3: Buying and selling of organs and tissues against a monetary amount or another interest are forbidden.

Article 4: Except for the distribution of information having scientific, statistical and new characteristics, all advertisement in connection with the harvesting and donation of organs and tissues is forbidden.

Article 5: Harvesting organs and tissues from persons under the age of 18 or from persons who are not sound of mind is forbidden.

Article 6: Both verbal and written consent for harvesting an organ must be obtained from a person/persons over 18 years of age and of sound mind in the presence of at least two witnesses and approved by a physician.

Article 11: In connection with enforcement of this law, the case of medical death is established unanimously by a committee of 4 physicians consisting of 1 cardiologist, 1 neurologist, 1 neurosurgeon, and 1 anesthesiologist, according to the rules, methods, and practices equivalent to the level of science reached in the country.

Article 12: The physicians who will perform the transplant surgery cannot be among the group which pronounced the donor as dead (Article 11).

Article 15: Those harvesting, storing, grafting and transplanting organs and tissues in a manner not conforming to this law, and those intermediating in such actions as buying and selling of organs and tissues, and those brokering the same, in the case that it does not require any heavier punishment, shall be sentenced to punishment of two (2) to four (4) years, and of 50,000 to 100,000 Turkish Lira.

Figure 6. **Transplant Legislation: Law No2238, June 3,1979**

the Directorate of Religious Affairs. I highlighted these examples in my efforts to convince the members of the Parliament, governmental institutions, and officials of the Department of Religious Affairs to persuade the public that transplantation is a life-saving procedure and religion is not an obstacle to organ donation. In the meantime, I established the Turkish Dialysis and Transplantation Society to coordinate these activities in 1977.

After all my efforts in that regard with the Parliament, the Board of Religious Affairs, the media and

the public, on June 3, 1979, Law No2238 on Harvesting, Storing, Grafting, and Transplanting Organs and Tissues was passed in the Parliament. In fact, the law has been deemed progressive enough to be used as a model by many other countries [1, 2] (Fig. 6). Once Law No2238 was passed, *we were finally enabled to start performing deceased-donor transplants in Turkey, and the first transplantation procedure was carried out on July 27, 1979 at Hacettepe University Hospitals*, a little more than a month after the law was approved [12, 13] (Fig. 7).



Musa Ambarcı (recipient)



Figure 7. **First local deceased-donor kidney transplantation in Turkey, Hacettepe University Hospitals**

Article 4: In the case of the aforesaid persons, where the next of kin do not exist or cannot be located, and the termination of life has taken place as a result of accident or natural death, provided that the reason for the death is not in any way related to the reason for harvesting and according to the conditions stated in Article 11, THE SUITABLE ORGANS AND TISSUES CAN BE TRANSPLANTED INTO PERSONS WHOSE LIVES DEPEND ON THIS PROCEDURE WITHOUT PERMISSION FROM THE NEXT OF KIN.

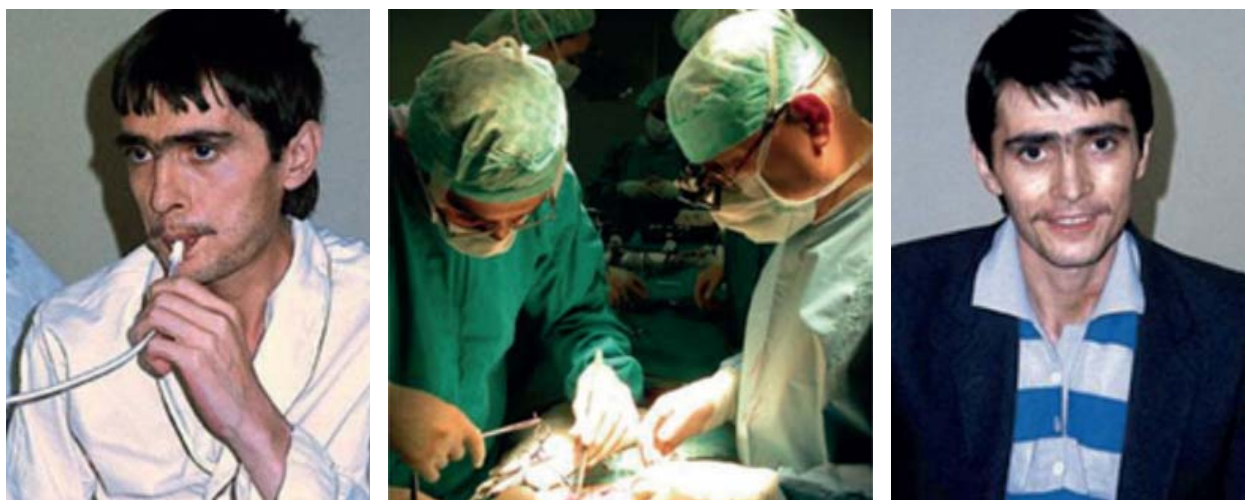
Figure 8. **Transplant Legislation: Law No2594, January 21, 1982 (addendum to Law No2238)**

We continued to educate the Turkish public about the benefits of organ donation and social responsibilities resulting from it. «Organ Donation Cards» were printed to promote organ donation and bring this concept to life by changing people's minds and attitudes. Meanwhile, in 1980, we founded the Turkish Organ Transplantation and Burn Treatment Foundation to advance these ideas. Due to continuous advancements in the field, our efforts were rewarded on January 21, 1982 with the approval of an addendum to Law No2238 and the enactment of Law No2594 (Fig. 8), which allowed the use of deceased-donor organs without consent from next of kin, thus increasing the organ pool for thousands of patients on transplant waiting lists [2].

Despite our kidney transplantation related activities, there were many patients with chronic kidney diseases and not enough hemodialysis centers to treat them. Therefore, we opened the first hemodialysis center in Ankara on March 12, 1982. The Hemodialysis Center eventually grew to become the Turkish Organ Transplantation and Burn Treatment Foundation Hospital in September, 1985 and the Baskent University Ankara Hospital in 1993.

After the enactment of Law No2238 on June 3, 1979 and Law No2594 on January 21, 1982, *the first successful deceased-donor liver transplantation in Turkey, the Middle East and Northern Africa was performed by our team on December 8, 1988 at the Turkish Transplantation and Burn Treatment Foundation Hospital* [14, 15] (Fig. 9). In 1989, our team became the first in Turkey to launch organ harvesting and sharing programs [16, 17].

In 1967, the first successful liver transplantation operation was conducted by Dr. Starzl. The liver was transplanted from a deceased donor. Since then, until the late 1980s, the vast majority of transplantations were performed with the livers from deceased donors. However, many patients were still waiting for the liver transplant. Therefore, partial liver transplantation could become an adequate solution to the problem. Raia S and Associates made the first attempts to carry out the innovative surgical procedure [18]. In 1989, Broelsch's team performed the first living-donor liver transplant in pediatric patients in the United States and it was one of the first successful operations of its kind in the world [19]. Almost simultaneously, on March 15, 1990, *a 10-month-old child received a transplant from his*



Fuat Koç (Recipient)

Figure 9. **The First Successful Deceased-Donor Liver Transplantation in Turkey, the Middle East and Northern Africa, Turkish Organ Transplantation and Burn Treatment Foundation Hospital**

mother during the first living-related segmental liver transplantation in Turkey, the Middle East and Europe performed by our team [20–22] (Fig. 10).

The first successful operation in pediatric patients encouraged us to apply the same technique in the treatment of adult patients. On April 24, 1990, our team was the first in the world to perform successful segmental living-related left lobe

liver transplantation in an adult (from a father to his 22-year-old son) at the Turkish Transplantation and Burn Treatment Foundation Hospital [23] (Fig. 11).

On May 16, 1992, we performed the first combined liver-kidney transplantation from a living-related donor (from a mother to her 24-year-old daughter) at the Turkish Transplantation and Burn Treatment Foundation Hospital (Fig. 12). It was the first



Hüseyin Mert (father), Çağdaş Anıl Mert (child),
Gül İsmet Mert (mother)

Figure 10. **The first living-related segmental liver transplantation in Turkey, the Middle East and Europe, Turkish Organ Transplantation and Burn Treatment Foundation Hospital**



Hasan Işık (father — donor)



Erdemir ışık (son — recipient)

Figure 11. **The first adult segmental living-related liver transplantation (left lobe) in the world, Turkish Organ Transplantation and Burn Treatment Foundation Hospital**

operation of its kind in the world and, with that operation, we proved that both kidney and liver could be used from the same donor using careful surgical technique [24].

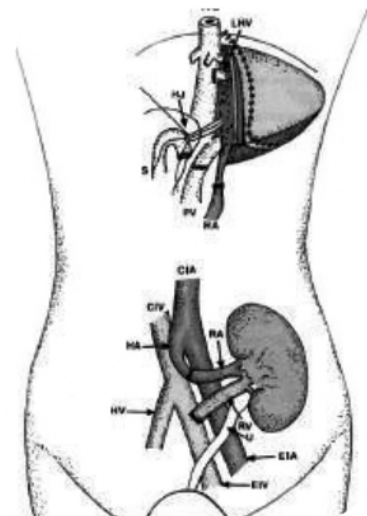
The scarcity of deceased-donor organs and the problems with graft-body weight disparity for adult recipients in living donor liver transplantations led us to initiate the heterotopic auxiliary segmental liver transplantation program in 1998. The aim of this technique is to take advantage of the remaining function of the cirrhotic liver. Use of this technique has increased the living donor pool and has even allowed us to use one deceased donor to provide tissue for two liver transplant recipients [25–32] (Fig. 13).

Where Are We Today?

In 1993, we consolidated the accumulated resources and established Baskent University as an umbrella organization to promote our medical and social education goals. At Baskent University, we continued to develop our pioneering research program and to improve on our successful transplantation record. Vigorous efforts made by our group have resulted in an increased number of transplantations and effective immunosuppressive protocols. These advancements have led to a dramatic improvement in allograft survival over the years. Notwithstanding considerable achievements, a significant shortage of deceased donors remains a problem, and key efforts



Nevin Teke (mother — donor) and Aysenur Teke (daughter — recipient)



Surgical Technique

Figure 12. **The first combined liver-kidney transplantation in the World, Turkish Organ Transplantation and Burn Treatment Foundation Hospital**



Deceased-Donor Partial Liver Transplantations. 17 years old Nihal Güngör (1998) and 27 years old Sırma Erceyiş (2007). Still alive



Living-Related Liver Transplantation. 40 years old Çağın Sığın (1981). Transplantation from mother (1999). Deceased Donor Retransplantation due to rejection (2002). Still alive

Figure 13. **Heterotopic auxiliary segmental liver transplantations in Turkey, Baskent University Ankara Hospital**

continue to be made to address it by educating the Turkish public about organ transplantation and donation. We initiated the establishment of 14 hospitals/outpatient clinics, 24 hemodialysis centers, 3 peritoneal dialysis centers and 2 rehabilitation centers and allocated our own resources to this project.

As of October 2021, a total of 3,256 kidney transplantations were performed at our 4 centers. Of these, 2,536 (77.9%) involved living-related and 720 (22.1%) deceased donors. In addition, our team performed a total of 695 liver transplantations (483 (69.5%) living donor transplants and 212 (30.5%) deceased donor transplants), 142 heart transplantations, 2 heart valve transplantations, 2 pancreas transplantations, 369 cornea transplantations, and 1,204 bone marrow transplantations (Table 1).

Today, in Turkey, there are 948 specialized centers that focus on organ transplantation (Table 2). In addition, there are 886 hemodialysis centers and 133 peritoneal units throughout Turkey. The number of dialysis patients is 64,633 and the number of dialysis machines is 17,759.

Continuous accumulation of knowledge and experience, combined with high-technology equipment and a specialized team of physicians, allows providing the most advanced, research-supported and systematic treatment to patients in Turkey. In 2001, the Turkish Ministry of Health founded the National Coordination Center with the aim of consolidating all related resources under an umbrella organization. This center is responsible for the promotion of transplantation activities, especially for deceased-donor organ procurement. It is encouraging to see that, despite existing extreme deceased donor shortage, organ procurement has increased since the center was established.

Organizations and Societies

Organizations and societies are the major cornerstones for the development and advancement in the various facets of transplantation. Since 1975, throughout my scientific studies, I have founded various national and international societies with the aim of coordinating transplantation activities and setting up cooperation in this field.

In 1977, the Turkish Dialysis and Transplantation Society was established and the first meeting was held in Bursa on June 4–6, 1980 [4]. In 1980, the Turkish Organ Transplantation and Burn Treatment Foundation was founded with the aim of promoting organ donation, supporting patients with insufficient financial resources, creating a platform for international collaboration and cooperation as

Table 1. **Baskent University Team Transplantation Activities in Turkey from November, 1975 to October, 2021**

Organ/tissue donor	Living donor	Deceased donor	Total
Kidney	2,536	720	3,256
Liver	483	212	695
Heart	0	142	142
Heart valve	0	2	2
Pancreas	0	2	2
Cornea	0	369	369
Bone marrow	1,204	0	1,204

Table 2. **Transplantation Centers in Turkey**

Transplant Type	Number of centers
Kidney	79
Liver	47
Heart	15
Lung	3
Pancreas	8
Bone Marrow	138
Cornea	607

well as development of training programs and opening new dialysis and transplantation centers.

After attending the First International Middle East Symposium on Organ Transplantation organized by Prof. George Abouna in December 1982, I realized that there was no cooperation and coordination among the Middle Eastern countries. Therefore, I established the Middle East Dialysis and Organ Transplantation Foundation (MEDOTF) in 1984 for the purpose of facilitating organ sharing and procurement in the Middle East. The First Meeting of the Foundation was held in Istanbul on November 17–20, 1985.

After organizing The First Meeting of the Middle East Dialysis and Organ Transplantation Foundation (MEDOTF), I realized that there was a need for an international society in the region. The Middle East Society for Organ Transplantation (MESOT) was initially founded in Turkey in July 1987, and was subsequently incorporated and registered as a nonprofit international scientific society with Swiss Chamber of Commerce, Bern, in June 1988.

In 1990, the Turkish Transplantation Society (TOND) was established by our team. From its inception, its main goal is to tackle many of the problems that are being faced these days in the field of transplantation in Turkey and all over the world. Our efforts to promote and encourage research and education in the field of organ transplantation continue to this day and, with great commitment and enthusiasm from members and organizers alike, the Society has held 14 international scientific congresses both in Turkey and outside Turkey so far.

In 2014, The Turkic World Transplantation Society (TDTD) was established by our team. For the past 25 years, my team and I have been working with colleagues in the Mid Asia region to assist them in establishing successful treatments for end stage organ disease as well as education and training. TDTD aims to create an arena for communication and collaboration in the field of organ transplantation among the Turkic States of the World. There are currently more than 500 members from Azerbaijan, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan and Turkey [33]. Today, TDTD is actively encouraging centers in the region to start kidney and liver transplant programs to prevent patients seeking transplant services outside their country, which are often costly, with equal if not less favorable results, and can lead to cases of unethical transplant practice.

Organ Trade and Transplant Tourism

Deceased-organ donation is the greatest challenge in the field of organ transplantation today. Millions of people die and are buried with healthy organs, which could save the lives of many patients who continue to wait on transplant lists. This is the responsibility of the international transplant community to ensure that the growing demand for organs is met within transparency, ethical and legal boundaries and to create a system of meeting the organ demand entirely with deceased organ donation. Some possible solutions to the obstacles that are faced with regard to organ donation and transplantation include:

- expansion of funding resources;
- establishment of the national organ procurement centers;
- encouragement of an organ sharing network and registry;
- addressing religious and social concerns;
- elimination of commercial transplantation and organ trafficking.

To sum up, success in setting up a transplantation system depends on legislation, coordination and education [34].

DECLARATION OF INTERESTS

The authors have no conflicts of interest to declare.

REFERENCES

1. Haberal M, Moray G, Karakayali H, Bilgin N. Ethical and legal aspects, and the history of organ transplantation in Turkey. *Transplant Proc.* 1996;28(1):382-3.
2. Haberal M, Moray G, Karakayali H, Bilgin N. Transplantation legislation and practice in Turkey: a brief history. *Transplant Proc.* 1998;30(7):3644-6.
3. Haberal M, Bilgin N, Sanaç Y, Güre A, Bor N. Köpekte Baypas Kullanılmadan Yapılan Ortotopik Karaciğer Homotransplantasyonu. *Hacettepe Tıp/Cerrahi Bülteni* 1972;5(4):462-74.
4. Haberal M, Büyükpamukcu N, Saatci U et al. Kidney transplantation. In: Abstracts of the 1st National Dialysis and Transplant Meeting of Turkey. Bursa, Turkey, June 4-6, 1980. *Kidney International.* 1981;19(1):103-5, January 1, 1981.
5. Haberal M, Sert S, Aybasi N, et al. Living Donor Kidney Transplantation. *Transplant Proc.* 1988;20(1 Suppl 1):353-5.
6. Haberal M. Development of Transplantation in Turkey. *Transplant Proc.* 2001;33(7-8):3027-9.
7. Haberal M, Oner Z, Cakmakci M, Turan M. Long term graft survival of imported cadaver kidneys. In: Abstracts of the The XIIInd Congress of the European Dialysis and Transplant Association—European Renal Association Brussels, Belgium June 25—29, 1985. *Kidney International.* 1985;28(2):376, August 1, 1985.
8. Haberal M, Gulay H, Arslan G, Bilgin N. Cadaver kidney transplantation with prolonged cold ischemia time. *Transplant Proc.* 1988;20(1 Suppl 1):932-4.
9. Tokyay R, Hamaloglu E, Velidedeoglu E, Bilgin N, Haberal M. Excellent results with imported cadaveric kidneys. *Transplant Proc.* 1992;24(5):1844-5.
10. Haberal M, Gulay H, Arslan G, et al. Cadaver kidney transplantation with cold ischemia time from 48 to 95 hours. *Transplant Proc.* 1984;16(5):1330-2.
11. Haberal M, Aybasi N, Arslan G, Bilgin N. Cadaver kidney transplantation cases with a cold ischemia time of more than 100 hours. *Clin Transpl.* 1986;126-7.
12. Haberal M, Sert S, Aybasi N, et al. Cadaver kidney transplantation cases with a cold ischemia time of over 100 hours. *Transplant Proc.* 1987 Oct;19(5):4184-8.
13. Haberal M, Demirag A, Cohen B, et al. Cadaver kidney transplantation in Turkey. *Transplant Proc.* 1995; 27(5):2768-9.
14. Haberal M, Gulay H, Büyükpamukcu N, et al. Liver transplantation in Turkey. *Transplant Proc.* 1991;23(5):2563-5.
15. Haberal M, Tokyay R, Telatar H, et al. Living related and cadaver liver transplantation. *Transplant Proc.* 1992;24(5):1967-9.
16. Haberal M, Gulay H, Karpuzoglu T, et al. Multiorgan harvesting from heart-beating donors in Turkey. *Transplant Proc.* 1991;23(5):2566-7.
17. Haberal M, Kaynaroglu V, Bilgin N. Ethics in organ procurement in Turkey. *Int J Artif Organs.* 1992;15(5):261-3.
18. Raia S, Nery JR, Mies S. Liver transplantation from live donors. *Lancet.* 1989;2(8661):497.
19. Broelsch CE, Whittington PF, Emond JC, et al. Liver transplantation in children from living related donors. Surgical techniques and results. *Ann Surg.* 1991; 214(4):428-437; discussion 437-9.
20. Haberal M, Büyükpamukcu N, Telatar H, et al. Segmental living liver transplantation in children and adults. *Transplant Proc.* 1992;24(6):2687-9.
21. Haberal M, Büyükpamukcu N, Telatar H, et al. Segmental living liver transplantation as an alternative method. *Gastroenterology.* 1992;3(3):455-9.
22. Haberal M, Abbasoglu O, Büyükpamukcu N, Bilgin N, Telatar H, Besim A. Segmental living related donor liver transplantation in childhood. *Transplant Proc.* 1993;24(3):2200-2.
23. Haberal M, Telatar H, Bilgin N. Living related liver transplantation in an adult and a child. W. Land, J. B. Dosssetor (Eds.) *Organ Replacement Therapy: Ethics, Justice and Commerce.* Springer-Verlag Berlin Heidelberg; 1991:83-92.
24. Haberal M, Abbasoglu N, Büyükpamukcu N, et al. Combined liver-kidney transplantation from a living related donor. *Transplant Proc.* 1993;25(3):2211-3.
25. Haberal M, Moray G, Bilgin N, et al. A preliminary report on heterotopic segmental living-related and/or split-liver cadaver transplantation. *Transplant Proc.* 1999;31:2899-901.
26. Haberal M, Karakayali H, Boyacioglu S, et al. Successful living-related heterotopic auxiliary liver transplantation for chronic Budd-Chiari syndrome. *Transplant Proc.* 1999;31:2902-3.

27. Haberal M, Arda IS, Karakayali H, et al. Heterotopic segmental liver transplantation in children. *Transplant Proc.* 2000;32:535-6.
28. Haberal M, Arda IS, Karakayali H, et al. Successful heterotopic segmental liver transplantation from a live donor to a patient with Alagille syndrome. *Journal of Pediatric Surgery.* 2001;36(4):667-71.
29. Haberal M, Karakayali H, Emiroglu S, et al. Heterotopic liver transplantation during adolescence. *Transplant Proc.* 2001;33:2832-3.
30. Haberal M, Emiroglu R, Arslan G, Karakayali H, Moray G, Bilgin N. Long-term survival with heterotopic liver transplantation. *Transplant Proc.* 2002;34:2468-71.
31. Boyvat F, Aytakin C, Firat A, Harman A, Karakayali H, Haberal M. Diagnostic and therapeutic management of hepatic artery thrombosis and stenosis after orthotopic and heterotopic liver transplantation. *Transplant Proc.* 2003;35:2791-5.
32. Haberal M, Sevmis S, Karakayali H, et al. Long-term survival in a patient after heterotopic segmental auxiliary liver transplantation. *Pediatr Transplantation.* 2008;12:816-20.
33. Moray G, Torgay A, Haberal M. Baskent University Organ Transplantation Activities in Mid Asia. *Exp. Clin Transplant.* 2018;16(4):363-6.
34. Haberal, Mehmet (Ed.). *Transplantation in Turkey and in our regions.* Ankara, Turkey, Baskent University; 2021.

Трансплантація в Туреччині та регіоні

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Узагальнено основні події історії трансплантації в Туреччині та регіоні.

У 1975 р. ми провели першу в Туреччині пересадку нирки за життєвими показаннями. У 1978 р. ми здійснили першу трансплантацію нирки від померлого донора, використовуючи орган, наданий Eurotransplant. У 1979 р. був прийнятий закон про підготовку, зберігання і трансплантацію органів та тканин. Перша в Турції трансплантація нирки від померлого донора була виконана нашою командою в 1979 р. У 1988 р. відбулася ще одна новаторська подія в Туреччині, на Близькому Сході та в Північній Африці: перша успішна трансплантація печінки від померлого донора, а в 1990 р. наша команда здійснила першу в Туреччині, регіоні та Європі педіатричну сегментарну трансплантацію печінки за життєвими показаннями. Через місяць була успішно проведена трансплантація печінки (лівої частки) від дорослого до дорослого. 16 травня 1992 р. ми провели першу комбіновану трансплантацію печінки та нирки від живого донора, що стала першою операцією такого роду у світі. У період з листопада 1975 р. до жовтня 2021 р. ми виконали трансплантацію 3256 нирок у лікарнях університету Хаджеттепе, а пізніше — в університеті Баскент і, починаючи з 1988 р., 695 трансплантацій печінки. За даними Міністерства охорони здоров'я, з 2002 р. до 20 жовтня 2021 р. у різних центрах Туреччини було проведено 46 115 трансплантацій нирки, 17 868 трансплантацій печінки, 1153 трансплантації серця ≥ 198 трансплантацій підшлункової залози. У 2001 р. Міністерство охорони здоров'я створило Національний координаційний центр як головну організацію для сприяння трансплантації, особливо для отримання органів від померлого донора. Кількість трансплантацій щоденно зростає по всій країні, але цей процес гальмує брак донорських органів.

Ключові слова: трансплантація органів, історія трансплантації, трансплантаційний туризм

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