



# Organ Transplantation Through Historical And Religious Aspects With Reference to Montenegro

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## SUMMARY

**Introduction:** Since the second half of the twentieth century, thousands of human lives have been saved worldwide by organ transplantation. Montenegro is one of the signatories of the Istanbul Declaration, which strictly prohibits the trade in human organs. In 2009, a law was adopted in Montenegro that allows organ transplantation for medical purposes, which is in accordance with European and international legislation.

**Methods:** For this paper, we conducted a systematic literature search using relevant historical religious, ethical, and medical data. We searched databases: Pubmed, Scopus, EBSCO, Google scholar, Serbian citation index, Researchgate and others. We also referred to the experiences gained in the work at the Clinic for Nephrology of the Clinical Center of Montenegro. The keywords we used for the literature search were related to: History of Medicine, Ethics, Monotheistic Religions, Transplantation Program and Legislation in Biomedicine.

**Topic:** Organ transplantation is a method over 70 years old; its general application has been delayed due to the inevitable rejection of the transplanted organ. Organ transplantation is one of the most significant scientific discoveries in surgery and immunology and is significant for the therapeutic progress of modern medicine.

**Conclusion:** This is a complex topic that requires extensive information, not only in the medical field of research, but also in the legal, ethical and religious fields. Evidence-based medical guidelines, ethical, religious aspects, the Istanbul Declaration, and careful consideration must be taken into account before making a decision that is best for the patient, his family, and the country's health care system.

**Keywords:** History of Medicine, Ethics, Monotheistic Religions, Transplantation Program

## INTRODUCTION

Throughout the history of civilization, the human body has been the subject of theological discussions and a symbol of religious communities [1]. Transplant surgery is a technique that is over 70 years old; its general application has been delayed due to the inevitable rejection of the transplanted organ [2,3]. Signifi-

cant progress was made in this area when new drugs were discovered to suppress immune responses [4]. Throughout history, surgery has had significant medical, socio-economic, ethical and philosophical consequences, especially in the time before the discovery of asepsis, antisepsis and antibiotic therapy [5]. Organ

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transplantation is one of the most significant scientific discoveries in surgery and immunology and is significant for the therapeutic progress of modern medicine [5]. What began as an experiment in the mid-twentieth century has become a practice that saves thousands of lives worldwide [6]. This article reviews available literature and personal observations through the experience of working with transplant patients at the Clinical Center of Montenegro, Podgorica, Montenegro, aiming to explore the history of organ transplantation in the world and in our country, as well as the religious aspects of transplantation and organ donation.

## METHODS

For this review, we conducted a systematic literature search using relevant historical religious, ethical, and medical data. In this paper, we tried to review the history of organ transplantation in the world and in our country, as well as the religious aspects of transplantation and organ donation with reference to ethical principles regarding organ donation. We searched databases Pubmed, Scopus, EBSCO, Google scholar, Serbian citation index, Researchgate and others. We also referred to the experiences gained in the work at the Nephrology Clinic of the Clinical Center of Montenegro. The keywords we used for the literature search were related to: History of Medicine,

Ethics, Monotheistic Religions, Transplantation Program and Legislation in Biomedicine.

## TOPIC

Organ transplantation is a method over 70 years old; its general application has been delayed due to the inevitable rejection of the transplanted organ. Organ transplantation is one of the most significant scientific discoveries in surgery and immunology and is significant for the therapeutic progress of modern medicine. This is a complex topic that requires extensive information, not only in the medical field of research, but also in the legal, ethical and religious fields.

### Historical aspects of transplantation

Several descriptions of organ transplants can be found in the Bible. In the Christian religion, the „miracle of the black leg” is described in Jacopo da Varagine’s *Legenda Aurea* (348 AD); In this surgical procedure, surgical medicine is practiced by Saints Cosmas and Damian, who replace the patient’s gangrenous leg with the leg of a dead Ethiopian soldier (Picture 1) [6,7]. Cosmas and Damian are the patrons of medicine and were twin brothers, born in the third century in the city of Egeia, in the district of Cilicia (between Turkey and Syria), an Arab province of the Roman Empire [7]. The



**Picture 1.** Master of the Rinuccini Chapel (Matteo di Pacino), panel (pradella scene) (1370-1375), North Carolina Museum of Art, Raleigh NC (USA)

**Downloaded from:** Skuse A. *Surgery and Selfhood in Early Modern England: Altered Bodies and Contexts of Identity* [Internet]. Cambridge (UK): Cambridge University Press; 2021.

**Picture 2.** Joseph Murray (Back Left) Performed the First Successful Kidney Transplant on Twins Richard and Ron Herrick in 1954

**Downloaded from:** Marino IR, Cirillo C. An abridged photographic history of organ transplantation. *Exp Clin Transplant.* 2014 Mar;12 Suppl 1:11-6. doi: 10.6002/ect.25liver.l14.



era of solid organ transplantation began with Dr. Murray and his team in 1954. By reviewing the literature, we found information that a successful kidney transplant between living identical twins was first performed by Joseph Murray (1919-2012) in Boston. The operation was successful, and the recipient survived 8 years without an organ transplant. He received the Nobel Prize for this endeavor in 1990 (Picture 2) [8-10]. The first known heart transplant was performed by dr. Christian Barnard (1922-2001) in Cape Town, South Africa, a 53-year-old immigrant with a diagnosis of myocardial infarction [10]. Barnard worked in Minnesota, where Dr. Lillehey developed the field of open heart surgery. The patient survived 18 days with the new heart; as a result, the operation was declared a success, and heart transplants followed worldwide [6,10]. The development of the organ transplant procedure in the 1960s was partly the result of a change in the definition of death. The previous cardiorespiratory definition of death has become inappropriate due to the increased ability of intensive care technology to sustain the life of patients, especially those potential donor patients who have died in trauma. The concept of brain death was introduced in 1968 by the board of Harvard Medical School. The report of that commission became influential, but the content of the report was still debated [6,11]. In 1958, Francis Moore described the orthotopic liver transplantation technique in dogs. Later, in 1963,

Starzl et al. performed the first liver transplant. By 1977, 200 liver transplants had been performed worldwide. Liver transplantation has become the standard therapy for mostly chronic liver diseases. In 1979, Roy Calne first used cyclosporine in two patients undergoing liver transplantation. In 1990, Starzl et al. reported the successful use of tacrolimus in liver transplant patients who experienced organ rejection despite the use of conventional immunosuppressive therapies [12,13]. The first successful solid organ transplant in Turkey was performed by Haberal in 1975 with a kidney transplant from a living donor. After that, laws no. 2238 and 2594 from 1979 and 1982, which opened the way for the use and preservation of cadaveric tissues/organs [14]. Boyer KL et al stated in a 1995 publication that key factors in organ transplantation are related to donor tissue, transplantation technique, and recipient status. They emphasized that improvements in surgical techniques and immunosuppressive therapy would enhance organ transplantation, a perspective that remains relevant today [15].

### Religious aspects of transplantation

Organ donation is regarded as a virtuous act in Islam. A study by Azuri et al. suggests that religious belief, as well as its absence, are central factors in making personal decisions about organ donation [16]. Historically, physicians sought divine help and the support of natural remedies in order to perform their duties and help the sick and wounded man [17]. Bokek-Cohen I et al suggest that religious concerns about the legitimacy of cadaveric organ donation are the main factors preventing people from agreeing to donate organs postmortem for transplantation; this is the main cause of the severe shortage of available organs for transplantation [18]. According to Islamic law, organ donation is an act of *sadekatul jariya*, and individuals are allowed to donate organs with the intention of saving human lives [19]. The first successful kidney transplant in Arab countries was performed in 1972 in Jordan. Some of the Arab countries followed suit and started their own organ transplant programs in the 1970s and 1980s. All these transplants were done from living donors. In Saudi Arabia, the kidney transplant service went through several developmental stages, culminating in the establishment of the Saudi Organ Transplant Center, which became a

prototype for a successful multi-organ procurement center to emulate in Arab and Muslim countries [20]. The first kidney transplant in Iran was performed in 1967. Currently, Iran is the only country without a waiting list for kidney transplants, and > 50% of patients with end-stage renal disease have functional transplants. In April 2000, the parliament passed a law recognizing brain death and allowing organ transplantation from a deceased donor [21]. In 2011 and 2012, Iran was ahead of all member countries of the Middle East Society for Organ Transplantation in performing kidney and liver transplantation from a deceased donor [22]. The use of living unrelated kidney donors should be legally, morally and ethically justified and compatible with ethical principles. Many medical experts believe that an increasing number of patient deaths and commercial transplants will occur if the kidney donation system remains purely altruistic [23]. Among other things, transplantation has moral issues. Islam is a holistic religion that takes into account a holistic approach to man through physical, spiritual, ethical and religious aspects. Islam respects life and the fact that the living need more than the dead, and thus allows organ donation to be considered in certain circumstances. The sources of Islamic law are discussed briefly to help non-Muslims understand how the parameters of organ transplantation are derived [24]. In Jordan, the International Council of Islamic Jurisprudence in October 1986 recognized brain death as a recognized sign of death in Islam. This paved the way for brain-dead organ transplants, which began immediately in Saudi Arabia. In 1990 and 2003, the International Islamic Fiqh Academy (IIFA) and the Islamic Fiqh Academy (IFA) issued important fatwas on organ transplantation. By the end of 2008, more than 3,600 brain-dead organs had been transplanted in Saudi Arabia [25]. The results of the study by Al-Kerem V et al. observed religious and cultural barriers among the respondents and that the country's health system instead focuses on concerns about the distrust of the general population in health services [26]. In the Christian religion, the apostle Luke, St. Cosmas and Damian, and St. Panteleimon served throughout the centuries as worthy role models for doctors who called on them for help, and they are still considered protectors of the medical profession [27]. In Christianity, the saint's most famous posthumous miracle is

that of the black leg. The source of this story is „The Golden Legend of Jakob da Varagine”, from a collection of hagiographies compiled in the 13<sup>th</sup> century. St. Cosmas and Damian transplanted the black leg of an Ethiopian on the white body of a verger with a „cancerous” leg, and since the 1990s, the miracle of the black leg has appeared in Greece, presented in (neo) Byzantine style [28]. Research of available Orthodox sources related to the healing powers of St. Kozma and Damian showed extreme disregard for that miracle. Some modern Greek authors find it appropriate to ignore it [28]. Those two worlds have received symbolism in modern medicine, which has made remarkable progress in organ transplantation, especially as it constitutes a significant part of the history of medicine, especially transplantology [29]. „Basic Social Concepts of the Russian Orthodox Church”, in „Besedina” edition from 2007, point 12.7 states that modern transplantation has made it possible to provide effective help with organizational means and life are forced to be transplanted, but transplantation leads to certain moral problems and can represent danger to society. Unfair promotion of donation and commercialization of transactional activities create prerequisites for trade in human health, endanger lives human organs cannot be considered an object of purchase and sale from a living donor can only be based on good self-standing in order to save the life of another person, consent to explantation (removal of organs) was becoming obligatory for the life of love about the possible consequences of organ explantation for his health. Based on Divine Revelation, the Church professes faith in the bodily resurrection of the dead (Is. 26:19; Rom. 8:11; 1 Cor. 15:42-44, 52-54; Phil. 3:21). In the rite of Christian burial, the Church expresses respect for the body of the deceased. The Church suggests that voluntary lifelong consent of the donor is a condition for the legality and moral acceptability of explantation [30].

The Church considers the so-called assumption of consent of a potential organ donor to be an inadmissible violation of human freedom [30]. The Orthodox Church believes that human organs cannot be traded because otherwise it is unacceptable to take the life of another in order to produce one's own life. According to Orthodoxy, any medical intervention that does not harm another is permissible. Vuković and colleagues point out that Ortho-

dox churches support the transplantation of organs on the basis of its moral theology, and the larger religion in Serbia has positive attitude towards organ transplantation [31]. By reviewing the literature, we found that of all the Orthodox churches, the Greek Orthodox Church is one of the few that has publicly expressed its positive attitude towards organ transplantation [32]. The Catholic Church has a positive attitude towards organ donation, considering it to be the grace of God, because the goal is to provide health and life to patients for whom transplantation is the only cure [33]. Judaism is a monotheistic religion that encompasses diverse cultural and ethnic backgrounds. Judaism insists on honoring and respecting the dead (*kavod hamet*), where the competent rabbinic body should be involved before giving consent. (These guidelines were prepared in consultation with the Office of the Chief Rabbi) [34].

#### **Transplantation and organ donation in Montenegro**

Among other things, the original creator of the transplant program in Montenegro was Dr. Marina Ratkovic, MD, PhD head of nephrology with hemodialysis, Clinical Center of Montenegro, and later the Clinic for Nephrology and University Professor of the Faculty of Medicine in Podgorica, University of Montenegro. Doctors and nurses employed at the Department of Nephrology and Hemodialysis of the Clinical Center of Montenegro made a significant contribution to the preparation of patients for transplantation and the care of transplanted patients. In September 2012, in Montenegro, the legal, ethical and medical conditions were met for starting the transplant medicine program and the transplant program, which would be implemented in the Clinical Center of Montenegro in Podgorica, as the only tertiary health institution in the country. Previously, all Montenegrin patients who needed a transplant were referred to the regional transplant center. Donations after death caused a significant ethical dilemma among the population of Montenegro, mainly due to the definition of brain death [35]. In February 2011, Montenegro became a full member of the Regional Health Development Center (RHDC), which is part of the Southeast European health network, with its center in Zagreb, Croatia. RHDC is an organization and

project supported by the Council of Europe, with the aim of establishing all the necessary conditions for the development of transplantation in Southeast Europe. With the support of RHDC, cooperation was established between the State of Montenegro and the neighboring State of Croatia, which is located in the European Union [36]. Montenegro is an independent European country that is not yet part of the European Union, with 633,158 inhabitants. It is located on the Balkan Peninsula where the Orthodox faith dominates, followed by Islam and in third place is Catholicism. The first transplant in Montenegro was performed on September 25, 2012. Since then, 35 transplants have been performed, 34 from the living and only 1 from the deceased [37]. A study by Peličić et al., which was conducted in Montenegro, and refers to the sociodemographic and religious aspects of organ transplantation, suggests that the respondents, health workers and the general population, believe that religion has no influence on attitudes about organ donation. and that no monotheistic religion opposes organ transplantation. Additionally, Montenegrin media reports that representatives of certain religious communities in Montenegro believe that religion should not be an obstacle for organ donation [38]. A study related to the ethical aspects of transplantation in Montenegro suggests to the extent proposed that it is necessary to design a strategy in order to increase trust that organ donation will be performed only for the right purposes in order to avoid abuse and loss of citizens' trust in organ transplantation [39]. Currently, the main difficulty in developing a transplant program is the lack of organs available for transplantation [40,41]. Throughout history, organ transplantation has been associated with better long-term outcomes and better quality of life, and techniques for organ recovery have become less invasive [42]. There is an abundance of scientific work that could fundamentally change the way transplantation is conceived and practiced. One area of active research is the continued development of new immunosuppressive drugs [42]. Stem cell research is still in its early stages, so living organ donation is a lifesaver for thousands of patients waiting for an organ transplant [43]. The results of many studies show that not only whole body donation, but also organ donation is still a problem in many countries of the world [44].

## CONCLUSION

Our review indicates a lack of studies in Montenegro that dealt with the history of transplant medicine and religious aspects, which can be explained by the fact that the transplant program was formed relatively late, unlike other European countries.

From our examination of the literature, we can conclude that religion does not prohibit organ donation, but each of them has special regulations that must be respected, and above all the legal ones that are crucial for every civilized society. Providing the religious authority of believers regarding cadaveric organ donation is very effective in helping families and individuals cope with difficult and critical decisions regarding organ donation. To increase organ donation, public education campaigns must take into account the religious tenets of each religion and its subgroups and work with their spiritual leaders. Doctors and especially nurses, who are often the closest family of candidates for organ donation, should familiarize themselves with official religious positions on organ donation issues in order to have insight into the assessment and to respect the integrity and dignity of the patient. Tissue and organ transplantation is an important topic for thousands of people worldwide with chronic disease. It represents a chance for a better quality of life for the patient.

## CONFLICTS OF INTEREST

The author declares no conflict of interest.

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# Transplantacija organa kroz istorijske i religijske aspekte sa osvrtom na Crnu Goru

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## KRATAK SADRŽAJ

**Uvod:** Od druge polovine dvadesetog veka, u svetu je transplantacijom organa spašeno hiljade ljudskih života. Crna Gora je jedna od država potpisnica Istanbulske deklaracije koja strogo zabranjuje trgovinu ljudskim organima. U Crnoj Gori je 2009 godine, usvojen zakon kojim se dozvoljava transplantacija organa u medicinske svrhe, što je u skladu sa evropskim i međunarodnim zakonodavstvom.

**Metode:** Za ovaj rad smo izvršili sistematsko pretraživanje literature koristeći relevantne istorijske vjerske, etičke i medicinske podatke. Pretraživali smo baze podataka: Pubmed, Scopus, EBSCO, Google scholar, Serbian citation index, Researchgate i druge. Osvrnuli smo se i na iskustva stečena u radu na Klinici za nefrologiju Kliničkog centra Crne Gore. Ključne reči koje smo koristili za pretraživanje literature odnosile su se na: Istoriju medicine, Etiku, Monoteističke religije, Program transplantacije i zakonske regulative u biomedicini.

**Tema:** Transplantacija organa je metoda stara preko 70 godina; njeno opšta primena je odložena zbog neizbežnog odbacivanja presađenog organa. Transplantacija organa jedno je od najznačajnijih naučnih otkrića u hirurgiji i imunologiji i značajna je za terapijski napredak moderne medicine.

**Zaključak:** Ovo je složena tema koja zahtijeva opsežne informacije, ne samo u medicinskom polju istraživanja, već i u pravnom, etičkom i vjerskom polju. Medicinske smjernice zasnovane na dokazima, etički, vjerski aspekti, Istanbulska deklaracija i pažljivo razmatranje moraju se uzeti u obzir prije donošenja odluke koja je najbolja za pacijenta, njegovu porodicu i zdravstveni sistem jedne zemlje.

**Ključne reči:** istorija medicine, etika, monoteističke religije, transplantacioni program

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