Organ Donation: A Precious Gift for Second Life

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Abstract: Introduction: Human organ transplantation represent one of best example of scientific achievements of medical science. Organ transplantation is a gift of second life for thousand peoples of the world. It is very difficult and impossible thing for living individual who can donate their organ itself. Rarely very close relative or family members of needed person (organ recipient) donate his/her organ. But if person just after his /her death can donate their organ then it is possible to save many other lives .So for this purpose Government make rules and act that if individual just prior to his /her death or family members of patient just after death of their loving one wants donate patient’s organ then can donate organ lawfully. Brain-dead patients can be potential source for this purpose. Aim: By This article we try to awake awareness in general population. This article reviews the current rules and Act related to organ donation program in India. Organ donation means donating organ or biological tissue to a need full person (living recipient). Result: The transplanting organ of dying patients can save life of thousands peoples and also organ of dead patient survive or live even after his /her death. It is also a precious gift for loving ones of dead patient.

Keywords: Organ transplantation, Organ donor, organ recipient, brain death, Organ donation Act.

1. Introduction

Organ transplantation is one of the greatest medical gift of 20th century, which can gave new life of thousands people /patients in all over world .Act of organ donation is a golden sign of humanity. Transplantation of organ in a critically ill patient is a ‘Life saving gift’ giving by the organ donor. So organ donor is just like an angel.

Disparity between more demand of organs and their poor supply is major problem.

Global issue – shortage of organ

Major solution – deceased Organ donation.( Organ donation by a brain dead )

1st attempt to use a cadaver donor organ (kidney) was undertaken in 1965 in India (In Mumbai)¹.

1st kidney transplantation in India was done in 1970.

1.1 Laws and rules Governing Organ Transplantation


Human organ donated by the unrelated deceased donor is legal with acception of brain death.

1.2 Who can donate organ?

Both living and nonliving person.

a) Living

• Living related donation (brother, sister, son, daughter, grandson)

• Living unrelated donation (friend, in-law, neighbors)

b) Nonliving person /Deceased cadaver donation- brain-dead person /after cardiac death.

1.3 What is brain-death?

Brain-death: irreversible end of brain activity.

Occurs due to

1) A major head injury –As in road traffic accident.

2) Brain stroke or bleeding in a brain.

Total number of road traffic accident reported in india in 2013 was more than 1lac .It is 1.1% of world’s total death³. Approximately 40-50 % death in road -traffic accident occur due to head injury . These patient are brain dead. Head injured Patient from road -traffic accident alone are sufficient to meet demand of potential organ donors in our country .

Brain dead person are kept on ventilators to provide oxygen to organs and main tend a circulation, so organ remain healthy. In India the recognize brain death is a legal form of death⁴. A brain death /brain stem dead person can donate 8-10 organs. The Brain death is NOT a coma .

Coma: Coma is a state of deep unconsciousness where a person became sleepy with no movement of body part. Person can breath on his /her own , without help of a ventilator means brain is still functioning. In coma brain has a capacity to heal. Person will not be declared brain dead if there is some activity in brain.

Brain Death: Brain death is irreversible and permanent cessation of all brain functions .In a patient with brain death, individual can not sustain his own life but body’s vital functions may be maintained in an ‘intensive care unit’ for a short time period.
In India panel of 4 doctor need to declare a person as a brain
dead harvesting before his /her organs .This declaration done
after a series of exhaustive tests –
1) Cornea reflex test
2) Ear reflex test
3) Gag reflex test
4) Apnea reflex test

These test are repeated twice in a time frame of 6 hours.

The panel must include –
1) Medical administrators in charge of hospital.
2) An authorized specialist.
3) A Neurologist / Neurosurgeon.
4) A Medical officer treating the patient.

According to Dr. Anil Kumar (program officer for National
organ transplant ,program running under Directorate General
of Health services ,Ministry of Health & Family welfare.) .A
brain dead patient can donate organs –
1) Two kidney
2) One liver (it can be subdivided into 2 parts).
3) Two lungs
4) Heart
5) Small Intestine
6) Pancreases

Challenge: It is very difficult for Family members that their
loved one become dead , because brain-dead patient look
likes sleeping on a life support system. Patient’s Body is
warm on touch and heart has no beating so it is very difficult
for a doctor to convince family members to donate organs of their
brain dead loved one.

1st challenge is red-tapism and lengthy paper work.
According to existing rule, if potential donor is not related
to organ recipient needs to be approved by a state-level
committee or by a hospital committee.

Also find out a match organ recipient is difficult.

Difficulty:
1) Limited surgeons and hospitals equipped for organ
transplantation.
2) Ventilators for preserving the organs of a brain-dead
patient are pre-requisites.
3) ICU personnel who manage such situation should be
perfectly trained.

2. Organ -Donation After Cardiac Death-

According to Bardale alternative form of Cadaveric donor
‘Non-heart beating donor’ (NHBD) or organ donation after
cardiac death. In these patient heart–beat and blood
circulation has ceased. Patient’s Body is cold on touch and
heart has no beating so it is very easy for a doctor to
convince family members to donate organs of their dead
loved one. In NHBD organs should be removed instantly
(prior to lost organ’s viability) for transplantation.

In the med -1990s there was a resurgence of interest and
acceptance in western countries using organs from NHBD.
In 1995 ‘Maastricht classification’ put forward for transplant
by a NHBD.

Implementation such donation specially in ‘Indians’ will
need both social and cultural acceptance. It will also need
trained medical team immediately who can remove organ
almost instantly in a planned manner.

But families who want donate organ by consent easily
understood and accept that patient become die and decision
for organ donation take very fast, whereas in brain–dead
patient family cannot understand and accept that patient
become die and decision for donation very is very difficult.

3. How Can I Donate Organ?

For deceased organ donor written consent form by law-full
is pre-requisite.
Living organ donor fill consent form by downloading a
form by NOTTO (National organ & tissue transplant
organization). A ‘donor card’ is issued with a registration
number which show your willingness for donate.

One can register for organ donation at the NGOs listed
below –
1) MOHAN Foundation: http://mohanfoundation.org/
2) Gift a life: http://giftalive.org/
3) Shatayu: www.shatayu.org.in
4) Gift your organ: http://giftyourorgan.org/
5) Narmada Kidney Foundation

Organ Donation Form
Organ donation is a family decision. Therefore, it is important that donor discuss her/him decision with family members and loved ones so that it will be easier for them to follow through with her/him wishes.

**Three things – we can done**

1) Register decision of organ donation.
2) Inform and discuss with family member about organ donation.
3) One should Always keep ‘organ donor card’ in wallet.

Healthy organs should be transplanted as soon as possible from donor to recipient. Tissue may be removed within 12-24 hours after brain-death.

One organ donor can donate up to 25 different organs and tissues for transplantation. This can save 9 lives.

For any queries related to organ donation one can call at 18004193737 (Toll free number)

By MOHAN Foundation. MOHAN Foundation is a NGO based in Tamil-Nadu and Andhra-Pradesh.
Organs can be successfully donated.

**Factors considered before organ matching**
1. Medical urgency of recipient.
2. Degree of immune system matching in between donor and recipient.
3. Whether recipient is an adult or a child. It has importance.

**Exclusion criteria**
- Patient having infectious diseases, sepsis, contagious diseases, HIV intra-venous (IV) drug user can not donate her/his organ or tissue.
- Most cancer patient can donate organs.
- Patient having Hepatitis C can donate organs only a patient who also have Hepatitis C.

**Following organs can be transplanted –**
1. Intestine
2. Heart & Lungs (both can be transplanted simultaneously)
3. Lungs (alone)
4. Heart (alone)
5. Liver (an be give to more than 1 recipients after subdivide liver)
6. Pancreas & kidney
7. Kidney (alone)
8. Pancreas (alone)

**Following Tissues can be transplanted –**
1. Skin, cornea, bones, bone – marrow nerves brain heart-valve, ear-drum, ear-bones. A donor can donate – up to 100 year of age skin, cornea.
   up to 70 year of age Heart, Lungs
   up to 40 year of age heart Valves

Tissue such as cornea, skin, heart-valve and bones can also harvested and sterilized to store in a “Tissue Bank”. These tissue could be used later for future transplant (for 5 years) and reconstructive surgeries.

**Main Provision Act (Include Amendments & rules of 2014) are:**
The amendment to the Act was passed by the Parliament in 2011 and rules were notified in 2014.

a) First of all identification of Brain death.
b) Give- Certificate of brain death (Form 10).
c) Allow transplantation of human organs or tissue from brain-dead/cadaveric donor or from living donor.
d) Give power to Regulatory and advisory bodies for monitoring transplantation activity.
1) Appropriate Authority (AA) – It conduct regular inspections to examine quality of transplantation.
2) Advisory committee – It is for giving advice to the Appropriate Authority.
3) Authorization committee (AC) – It regulate transplantation from living donor.

e) Living donor
(i) A Near - Relative
(ii) Non- Relative

Non- Relative living donor needs permission of Authorization committee established by state to donate his /her organs.

Swap transplantation –When a Near- Relative living donor is medically incompatible with the

Organ recipient (married couple), then pair is permitted to do a swap transplant with another related matched donor & recipient pair .

f) Authorization for organ donation after brain death –
(i) May be given prior to death by individual itself.
(ii) Authorization process for organ /tissue donation unclaimed bodies outlined.

g) Organ retrieval
Organ retrieval means removal from organ from donor. It is done in a hospital with ICU facility and registered as a retrieval center. It has temporary storage and has facility for their transport.

h) Cost of donor management
Organ retrieval, its transportation, its preservation is pay by organ recipient, government institution, NGO (Nongovernment organization), not by donor family.

i) In Medico-legal case organ retrieval should be delay up to determination of cause of death.

j) Facilities and Manpower for registration of a hospital as a transplant center is outlined.

k) Infrastructure of hospital, equipment, guidelines, standard procedure for operation for tissue bank outlined.

l) Qualification of surgeon which done transplant, cornea and other tissue retrieval technicians are defined.

m) In all transplant center transplant coordinate should be must.

n) All NGO (Nongovernment organization), Societies and trust working in field of retrieval, storage, transplantation must need registration.

o) Central Government of India established a National Human organs & tissue removal and storage net-work i.e. NOTTO & ROTTO.

NOTTO (National organ and tissue transplant organization)
Website - www.notto.nic.in

ROTTO (Regional organ and tissue transplant organization)

SOTTO (State organ and tissue transplant organization).

Manner of establishing national or Regional or State human organs and tissue removal and storage and their functions Networks.

P. Central government should maintain a registry of donors & recipients of human organs & tissue.

Q. For supplying organ if any receive payment then he give penalties.

VARIOUS FORM- outline in Act- are follows –
1. Form 1: Near Relative consent.
2. Form2: Spouse consent
3. Form 3: Other than Near Relative donor consent.
4. Form4: Psychiatrist evaluation of donor
5. Form 5: HLA-DNA profile report
7. Form7: Self consent for deceased donation.
8. Form8: consent for organ donation from family.
10. Form 10: Brain death Declaration Form
11. Form11: Joint transplant application by donor / recipient
12. Form12: Registration of hospital for organ transplantation
13. Form13: Registration of hospital for organ retrieval
14. Form16: Grant of Registration
17. Form17: Renewal of Grant of Registration.
18. Form18: Decision by hospital authorization committee.
19. Form19: Decision by district authorization committee.
20. Form 20: Verification of Domicile for non –relatives.

Working guidelines for authorization committee .
1) Donor & recipient Tissue typing and other basic test.
2) Related Document of both donor & recipient ,birth certificate, marriage certificate.
3) Identity card and residence proof ,voter card, passport card ,driving license ,PAN card ,ration card ,bank account and family photo of both donor & recipient.

IF non- relative (No genetic relation between donor & recipient ) –
1) PCR (polymerase chain reaction) based DNA test method (Deoxyribonucleic Acid).
2) HLA Test (Human leukocyte Antigens)
3) Test for Human leukocyte Antigen –B alleles.

All Tests should be done in lab with NABL (National Accreditation Board for laboratories).

A RMP prior to removing a human organ from donor of brain death –
1) Form 8 (Form8 : consent for organ donation from family) has been signed by all members of Board of Medical Expert.
2) If donor after brain death is less than 18 year, Form 8 (Form8 : consent for organ donation from family) has been signed by all members of Board of Medical Expert and an authority as specified in Form 9 has been signed by parent of person.
Scoring System – Kidney donor profile index (KDPI) and Deceased Donor Score

KDPI was approved by organ procurement and transplantation network Kidney transplantation committee in 2013, for estimating risk of post-transplant kidney graft rejection from a particular deceased donor kidney in comparison to other kidney.

KDPI score include
1) Donor age
2) Donor height
3) Donor weight
4) Ethnicity
5) Serum creatinine level
6) History of hypertension, diabetes, hepatitis -C status
7) Cause of death.

Each kidney is scored in KDPI system from 0-100%. Higher score are accepted to have a minimal potential function of donor organ then with lower score.

Deceased Donor score was decided from 5 donor variables obtained at time of organ retrieval. creatinine clearance (0-4 points), history of hypertension (0-4 points), HLA mismatch (0-3 points), donor age (0-25 points) and cause of death (0-3 points).

Total number of point – (0-39).
A grade (A-D) was then assigned to specific deceased donor based on his/her total score. Greater than 20 points or grades C & D are defined as marginal donor with a much shorter potential function of donor organ.

References –