Title	Liver transplantation: who live? who die?
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Citation	20th Dr Sun Yat Sen Oration, Hong Kong, 6 June 2009. In Hong Kong Practitioner, 2009, v. 31 n. 3, p. 133-134
Issued Date	2009
URL	http://hdl.handle.net/10722/125457
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Liver transplantation – Who live? Who die?

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The first successful liver transplant operation in Hong Kong was performed on 5 October 1991 at Queen Mary Hospital. By now, 718 liver transplants have been performed. The 1- and 10-year survival rates of the patients were 90% and 70%, respectively. Such successful operation has brought many patients renewal of life and gainful employment. However, despite many successes, there remains a large number of patients who never receive a liver transplant because of the paucity of organ donation in Hong Kong. There are also some patients who die during or after the operation.

Liver is the most vascular organ in the body. Operating on the liver is therefore difficult and dangerous. Liver failure is associated with coagulopathy because almost all clotting factors are produced by the liver. Thus, a patient with terminal liver failure undergoing liver transplantation has a risk of serious bleeding during the operation. Indeed, it is the experience of many transplant surgeons that, apart from graft quality and surgical technique, bleeding volume is the most important determinant of hospital mortality. If a patient requires more than 5 litres of blood transfusion, he stands a higher chance of dying from the operation. With experience, however, major bleeding is no longer a frequent phenomenon. At Queen Mary Hospital, the average blood transfusion of patients operated between 1991 and 1994 was 11.8 units. After 2006, the average blood transfusion was 5 units. More importantly, about 20% of the patients did not require blood transfusion. Thus, the hospital mortality rate has been maintained below 5% in recent years. Nevertheless, some patients succumbed later because of the recurrence of hepatitis and cancer, or development of new cancer and opportunistic infection because of immunosuppression.

***HK Pract* 2009;31:133-134**

** This paper was presented at the 20th Dr Sun Yat Sen Oration on 6 June, 2009.*

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In Hong Kong, the deceased organ donation rate is only 3 per million population per year. Compared with Western centres (e.g. 20/million/year in the USA and 33/million/year in Spain), the donation rate, 3 per million population, is far too low to meet our local demand of 140 transplants per year. It results in many patients dying while awaiting a transplant. Those who could not wait went to China for liver transplants or underwent living donor operations in Hong Kong.

Living donor liver transplantation between adults was developed in Hong Kong in 1996. It solves the problem of organ shortage but not totally because not every volunteer is suitable for donation. About one-third of the volunteers can donate about 60% of their livers. The others are not suitable due to various medical and psychosocial reasons. In recent years, about two-third of liver transplantation in Hong Kong were living donor operation. Despite the fact that the long-term result of living donor operation is similar to the deceased organ operation, Hong Kong should not rely on the living donor operation indefinitely because the donor has to make a huge sacrifice. Moreover, the liver donation operation is not without risk. There are already donors who have suffered from serious morbidity such as liver failure requiring liver transplantation, paraplegia and coma. Up to now, there have been 19 known donor mortalities in the world. Sometimes, donors would regret their donation because of their physical and mental sufferings, loss of work and health insurability. To prevent such adverse events, apart from meticulous surgical techniques, a vigilant donor selection process is mandatory. The donors have to undergo evaluation stage by stage, including preliminary screening, clinical psychology and radiology evaluation, liver biopsy and informed consent. Of these evaluations, clinical psychology assessment is the most important to ascertain that the donation is totally voluntary. An ambivalent donor will not be allowed to donate.

Living donor liver transplantation is a by-product of the scarcity of deceased organ donation. If a community recognizes the risk of living donation and the people are

willing to go for deceased organ donation, there is really no need for living donation. Indeed, with the recent efforts of the Hong Kong Government to promote public education on organ donation, the number of deceased organ donation has increased. For the first time in the history of liver transplantation in Hong Kong, in 2009, the number of deceased donor liver transplantation far exceeds that of living donor operation. By June 2009, the number of deceased liver donation has already exceeded that of the entire year of 2008. Hopefully, with the increased number of deceased organ donation, healthy persons would not have to risk themselves for living donor operations.

Undoubtedly, liver transplantation benefits many patients but sometimes liver transplantation may harm the medical personnel. There have been instances that surgeons and para-medical supporting staff died in airplane crashes or car accidents on the way to graft retrieval operations. Doctors and nurses may be inflicted by patients' diseases and become patients themselves many years after. Despite that, many doctors and nurses continue their commitment and mission of saving the sickest patients in the world.

Liver transplantation in Hong Kong attracts public attention. The stage of liver transplantation as an extraordinary medical event has passed. Now, public education of organ donation is the most essential aspect in reducing the mortality of patients on waiting list and avoiding healthy persons undergoing donor hepatectomy. ■