

Living donation

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Living kidney donation is possible because most individuals have two healthy kidneys and it is possible to live a normal life with a single kidney. Parts of non-paired organs can also be removed from live donors; these include liver and lung lobes, the tail of the pancreas and segments of small intestine. The majority of liver transplants performed in India are from live donors and the number of programmes has expanded rapidly in recent years. The liver has the capacity to regenerate following resection of a segment or lobe. The growth of new liver tissue happens quickly and the liver returns to its pre resectional mass. Liver resection is difficult because of the complex segmental anatomy (Figure 88.2). In children, the left lateral segment (segments II and III) of an adult provides enough liver function and this is a relatively straightforward procedure. In adult-to-adult live donor liver transplantation the whole right lobe of the liver is removed from the donor (segments V–VIII). This is a more complex operation and the risk of donor mortality is 0.5–1%. Transplants from live donors have a number of advantages over deceased donor organs. Live donor organs are Claude Couinaud, 1922–2008, French surgeon and anatomist, described the segmental anatomy of the liver in his seminal book *Chirurgicales*. In the agonal period before death deceased donors exhibit marked changes in physiology related to a catecholamine storm and this can cause organ dysfunction. Clearly, live donor organs are not subjected to this insult. Potential live donors undergo a rigorous assessment process that includes imaging of the relevant vasculature by CT or magnetic resonance angiography (MRA) and tests of organ functional capacity. The operations are planned elective procedures undertaken in daylight hours and often adjacent theatres so that the cold ischaemia time is very short. It is usual for live donor organs to function immediately after transplantation and this is essential for liver and lung transplants. As a result of these advantages the long-term outcomes of live donor transplantation are superior to deceased donor outcomes. Set against these advantages for the recipient is the fact that the live donor is subjected to a major operation that they do not need. All live donor operations have uncommon but potentially life-threatening morbidity rates and there is a small risk of death. The ethical issues raised by live donation are understandably complex.

Right hepatic vein VII VIII VI V Cystic duct Gallbladder Figure 88.2 Segmental anatomy of the liver (Couinaud segments).

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