Perspective

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Various Classification Systems for Acute Ischemic Stroke

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Description

The presence of Multiple Renal Arteries (MRA) in prospective renal donors was once considered a relative contraindication to Live Donor Renal Transplantation (LDRT). This presumed technical difficulty in anastomosis and potential for in- creased vascular and secondary urological complications resulted in many potential healthy donors being overlooked for more favorable renal anatomy in deceased donors or alternate live donors. However, the increasing disparity between the escalating demand for renal transplantation and relatively stagnant supply of deceased donor organs has made it prohibitive for potential live donors to be declined based on arterial anatomy. Despite the technical faculties and potential complications of transplanting donor kidneys with MRA, these organs are increasingly accepted to maximize the pool of acceptable donors. With increasing expertise in vascular reconstruction and surgical technique, the acceptance rate of donors with MRA has increased universally among transplant centers. The impact of such complex donor arterial anatomy on the graft function and overall outcome remains an area of interest with limited available data.

The deceased donor program in Sri Lanka is still in its infancy with relatively poor donor rates compared to other countries. While definite forward strides have been made to increase deceased organ donation in the country over the last decade, LDRT presently remains the mainstay of transplantation in Sri Lanka. The National Institute of Nephrology Dialysis and Transplantation (NINDT) is currently the only dedicated transplant hospital in the country, and has been undertaking routine deceased and live donor transplants since 2010. This study was conducted by the Vascular and Transplant Unit of the NINDT to compare the short and mid-term outcomes of LDRT from accepted live donors having Single Renal Arteries (SRA).

Transplant Surgeon and Vascular

We conducted a prospective cohort study of all LDRT performed between March 2010 and March 2016 by the Vascular and Transplant Unit of the NINDT. All successive adult (≥ 14 years) LDRT performed by the unit during the study period were included. All pediatric (<14 years) transplants and all adult deceased donor transplants were excluded. No live donors were declined on the basis of arterial anatomy during this period. The study population was divided in to two groups; MRA and SRA. The surgical unit comprised of a single specialist Trans- plant surgeon to perform the donor operation and a specialist to perform the recipient operation. All recipient operations were performed by the same surgeon.

All live donor evaluations were done according to internationally accepted standard guidelines. All live donors underwent a rigorous medical, ethical and psychological evaluation based on the local guidelines and protocols laid out by the Ministry of Health, Sri Lanka. The side of donor nephrectomy was decided based on a combination of clinical parameters, renal arterial anatomy and differential renal function. Renal arterial anatomy was defined based on computerised tomographic angiography. No donors were declined based on arterial anatomy during the study period. Most donor nephrectomies were performed by open surgery. A few hand-assisted laparoscopic nephrectomies were done where facilities were available. The choice was based mainly on availability of laparoscopic nephrectomy facilities in the hospital. All such laparoscopic nephrectomies were of kidneys with SRA. The donor and recipient operations were always carried out concurrently in adjoining operating theatres. Histamine Tryptophan Ketogluterate (HTK) solution was used in all transplants for back-table flushing of the kidney and storage until recipient anastomosis.

A total of 312 live donor and 71 deceased donor transplants were carried out in our unit during the period of study. All 312 live donor recipients were recruited to the study, of whom 264 (85%) had SRA and 48 (15%) had MRA. The baseline characteristics of the study population are summarized. Among those with MRA, 41 had two, 5 had three and 2 had four arteries. Group 1 comprised of the 264 recipients of grafts with SRA. Group 2 had 39 patients and Group 3 had 9 patients. The mean overall ischaemia times, incidence of DGF or SGF, major urological complications, vascular complications, and 1-year graft survival are summarized. The ischaemia time in group 3 was less than in group 2, as the main artery was anastomosed first and graft reperfused while controlling the accessory artery with bull dog clamps. The accessory artery was then anastomosed while the rest of the kidney maintained perfusion. The ischaemia time in group 3 was less than in group 2, as the main artery was anastomosed first and graft reperfused prior to reconstructing the accessory artery. The mean follow-up was 16

(± 4.8) months. DGF requiring haemodialysis within the first week was encountered only in one patient in the entire study group, and belonged to group 2. This patient's DGF was a result of severe biopsy proven humoral rejection that required prolonged plasma exchange, intravenous immunoglobulin and rituximab therapy, thereby independent of the arterial anatomy. All patients with delayed function recovered graft function without the need for haemodialysis.

Although standard renal anatomy comprises of a single artery to each kidney arising from the aorta, the occurrence of MRA is a common anatomical variant. In one study by Pollak and colleagues that looked at 400 cadaveric donors, 28% had MRA, with 23% demonstrating double, 4% triple and 1% quadruple arteries. In a smaller study by Munnusamy and colleagues looking at live donors in India, 38% had MRA on pre-operative angiography; 13% on the right side, 13% on the left and 12% bilaterally. This is comparable to other reports of MRA present unilaterally in 25% and bilaterally in 10% of the population.

Vascular Anastomosis of Renal Grafts

Unlike renal veins which have multiple intracranial anastomoses, allowing them to be ligated more freely, renal arteries are end arteries. Ligation or injury to these arteries can render the supplied area ischemic, resulting in infarction. Therefore, reconstruction of all donor renal arteries other than small capsular branches is mandatory to obtain maximal graft outcome. The vascular anastomosis of renal grafts with MRA requires careful planning and reconstruction compared to the graft with a SRA. Whereas a SRA will only require a single anastomosis, grafts with MRA require either back-table reconstruction to make a common donor artery ostium or separate anastomosis of the individual arteries to the recipient.

Recipients of grafts with MRA appear to have similar long-term outcomes com- pared to those of SRA. Although an increased incidence of perioperative vascular and urological complications has been observed in the past, this is largely limited to studies that looked at deceased donor grafts with numerous confounding variables such as increased cold ischaemia times and preservation damage. Nevertheless, the use of an aortic patch often circumvents any technical difficulty associated with deceased donor grafts having multiple arteries. In contrast, live donors having multiple arteries require careful planning and reconstruction. In the setting of a rising demand for renal allografts, donor grafts with MRA may be accepted safely with meticulous surgical reconstruction and close surveillance post-transplant. The observed short and medium-term graft outcomes show no significant difference to single artery grafts.

A 22-year old male gave a cut across femoral corridor following a discharge wound. He went through an effective essential fix following restricted segmental resection of the harmed section. Start to finish anastomoses after resection of harmed veins incorporate, yet are not restricted to, hindered and constant stitching with, or without "dropping" of the unite as well as vessel. We offer a quick and dependable fix utilizing a thoughtfully and functionally straightforward method. Significant benefits include: the working framework is generally arranged towards the specialist; the back column of stitches is put as the two finishes are promptly pictured, keeping away from the requirement for possibly darkening footing fastens, and flushing is effortlessly performed before finishing the front stitch line. With start to finish anastomosis of the iliac, popliteal or tibioperoneal vein after injury, consummation arteriography is liked to separate the presence of vascular fit from distal in situ apoplexy or distal embolization into the popliteal or knife courses. While subspecialty preparing is omnipresent in the current time of careful instruction, there stay major parts of these subspecialties that are as yet basic overall medical procedure preparing.

The legitimate development of a vascular anastomosis is a vital instrument in the arms stockpile of any broad specialist. This section will audit the set of experiences and fundamental standards of vascular medical procedure, including the strategies and moves expected to securely acquire vascular control. We will depict the significant anatomic highlights intrinsic in an anastomosis and their physiologic results. Different ways to deal with anastomotic stitching will be portrayed exhaustively, with an attention on exact careful method and the clinical conditions where each may be generally pertinent. At last, the expected difficulties of anastomotic creation will be investigated, with a concise outline of crisis moves that can be utilized in case of uncontrolled circumstances. These important abilities will permit an overall specialist to securely acquire vascular control in case of drain, fix a harmed vessel, and make a detour around an unsalvageable vascular physical issue. A circulatory anastomosis is an association (an anastomosis) between two veins, for example, between supply routes (arterio-blood vessel anastomosis), between veins (veno-venous anastomosis) or between a conduit and a vein (arterio-venous anastomosis). Anastomoses among corridors and between veins bring about a large number of supply routes and veins, separately, serving a similar volume of tissue. Such anastomoses happen ordinarily in the body in the circulatory framework, filling in as reinforcement courses for blood to stream assuming one connection is obstructed or in any case split the difference, yet may likewise happen neurotically.