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Research Article

EXPLORATION OF GRAFT CONCLUSION OF KIDNEY TRANSPLANTATION WITH MULTIPLE RENAL ARTERIES

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Abstract

Background. Transplantation of the kidney graft with Multiple Renal Arteries was not common because it is very complicate procedure and it can carry a great MSK for the various abnormalities and complications. This single center research work carried out to examine the outcome of graft of transplantation of kidney with the multiple renal arteries.

Methodology: This was a retroactive research work. In this research work, we reviewed the clinical records of thirtyfive patients who had received grafts of kidney with the multiple renal arteries for the method of surgery, complications of surgery, function of graft and survival of the graft. We compared the results with those outcomes achieved in receivers of grafts of kidney with SRA.

Results: Out of total thirty-five grafts, we found two arteries of kidney in thirty allografts and three arteries of kidney in total five allografts. In group of multiple renal arteries, we found seven instances of complications in surgery, the average level of creatinine in serum were 122.0, 139.0 and 156.0 mol/L at one month, one year and five years correspondingly and the rates of survival of the actuarial graft were 94.30%, 88.60% and 830% at one, five and ten years correspondingly. In the group of SRA, we found total fifty-six instances of complications during surgery, the average level of creatinine in serum were 115.0, 121.0 and 141.0 mol/L at one month, one year and five years correspondingly and rates of survival of actuarial graft were 93.70%, 88.10% and 84.40% at one, five and ten years correspondingly.

Conclusion: Although the graft transplantation with the multiple renal arteries has very high danger of complications relatively, it also provided the outcome which is closely comparable with the results obtained in case of SRA. *KEY WORDS:* Multiple Renal Arteries, Graft, Instances, Transplantation, Surgery, Creatinine, Outcome, Actuarial, Survival.

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INTRODUCTION:

The shortage of the organ is the most important problem in the transplantation of the kidney. The living pool of donor is a growing foundation for various organs and holding this very pool at a level with optimum results is not valuable. multiple renal arteries are very commonly experienced anatomical distinction in the kidneys. In one research work, the prevalence unilateral multiple renal arteries were 23.0% and bilateral multiple renal arteries was 10.0%, so there is requirement of the careful procedures of surgery for the successful allografts of kidneys with the multiple renal arteries.

Tentatively, transplantation of the kidney with the multiple renal arteries has many demerits or side effects, long duration of ischemia, a very high occurrence of the acute tubular necrosis as well as acute rejection instances. Long stay at the hospitals and decreased function of graft are also some of the important demerits of this procedure.

METHODOLOGY:

The duration of this research work was from December 2010 to March 2019, we performed the six hundred and forty-six transplantation processes in which four hundred and sixty-one were living and one hundred and eighty-five were the cadaveric donors. We found the multiple renal arteries in thirty-five allografts of kidney. We retroactively reviewed the clinical records of the patients who obtained the allografts of kidney with the multiple renal arteries for the method of the anastomosis of arteries, vascular abnormalities, as well as the survival of the patients and graft, then we compared the outcome with gathered among the receivers of the SRA grafts. Among living donors, the identification of the pattern of vasculature of kidney carried out digital subtraction angiography or in recent times by CT angiography.

The procedure of the anastomosis of arteries in the group of SRA mostly by end-side anastomosis to the outer iliac artery, or least frequent, end-end anastomosis to inner iliac artery. In the group of the multiple renal arteries, various arteries anastomosed to outer iliac artery either independently (twenty-one patients), or after linking them to form a normal single stump (six patient), or making usage of a very usual aortic-cuff in case of cadaveric grafts (three patients). In five patients with three arteries, three had small arteries of upper polar arteries and two were present with two anastomoses, one artery alone and two on a cuff, to the outer most iliac artery. Habitually receivers with the multiple renal arteries were present with the provision of the intravenous infusion of heparin for the early post-surgical duration, followed by the aspirin for some next months. Doppler ultrasonography and scintigraphy of kidney carried out on one day just after the surgery to confirm better, constant graft's perfusion and repetition carried out whenever it gave indications.

RESULTS:

In this current research work, total thirty-five patients obtained the allografts of kidney with multiple renal arteries, from seventeen living and eighteen were cadaveric donors. Total two renal arteries were thirty grafts and three renal arteries in five grafts. We followed the patients for twelve to one hundred and sixty months. Among recipients of multiple renal arteries, we found peri-graft hemorrhage in 5.80% (n: 2) patients, renal arteries thrombosis in 2.90% (n: 1) patient, one among multiple artery's thrombosis was present in 8.60% (n: 3) patients and stenosis of the renal artery was present in 2.90% (n: 1) patient. The average levels of creatinine in serum were 115.0-53.0. 121.0-88.0 and 141.0-170.0 mol/L for the group of SRA at one month, one year and five years correspondingly. (Table I)

Parameters		Patients
Donors	Living	17
	Cadaveric	18
	Total	35
Allografts	30	2
	5	3
Complications	Peri-graft Hemorrhage	2
	Thrombosis	1
	Multiple arteries thrombosis	3
	Stenosis	1

 Table I: Allograft Results Of Kidney Transplantation With Multiple Renal Arteries

The rates of survival for actuarial graft in the group of multiple renal arteries were 94.30%, 88.60% and 83.0% at one, five and ten years correspondingly. In the group of SRA, we found the peri-graft hemorrhage in twenty-seven patients, thrombosis of the renal artery in sixteen patients and stenosis of the renal artery in thirteen patients. The average levels of creatinine of serum were 115.0, 121.0 and 141.0 mol/L at one month, one year and five years correspondingly. The rates of survival for actuarial graft in the group of the SRA were 93.70%, 88.10% and 84.40% at one, five and ten years correspondingly.

DISCUSSION:

Low prevalence (5.40%) of the multiple renal arteries in this research work was very frequent in the cadaveric (9.70%) in comparison with the grafts of the living donor (3.70%). Kidney transplantation with multiple renal arteries is not present with encouragement because of its short-comings. It has the ability to lead to high rate of occurrence of the vascular as well as urological abnormalities. There are three standard methods of surgery to deal with multiple renal arteries as in situ multiple anastomosis directly, a patch of carrel aortic in the transplants of cadaveric donor or the conversion into very few quantity of the arteries by the surgery of ex-vivo bench. The most important known methods for the implantation of the multiple renal arteries are;

- 1. the utilization of the outer iliac artery with end to side anastomosis and inside iliac artery or internal epigastric artery for end-end anastomosis for the arteries of upper polar,
- 2. with uniting the arteries on the bench surgery that can enhance the duration of the cold ischemia which does not have influence of the function of kidneys if properly perfused and cooled,
- 3. with the utilization of the Poly-Teflon patch to the anastomose multiple renal arteries,
- 4. Utilization of the inner or inferior epigastric artery shaped as a carrel-patch.

The prevalence of the multiple renal arteries in this research work was (5.40%) lower than the other series, which could have relation with the broad utilization of the grafts of kidney from the living donors (72.0%), where the kidney's selection with an alone one artery is not impossible. The prevalence of the post-transplantation. Complications of surgery among recipients of multiple renal arteries was much comparable with that in the group of SRA.

Osman stated that allografts with multiple renal arteries have association with the high danger of complications related to the hemorrhage. There is confirm enhancement in the vascular abnormalities with multiple renal arteries, because arteries are vulnerable to bending as well as torsion. Arteries of inferior polar must be anastomosed carefully as their obstruction can lead to the ischemia, urological anomalies and infarction like calycle or necrosis fistulae of ureter. In this current series, we found no disparities in the survival of grafts, function of graft or early and late post-transplantation vascular abnormalities between the groups of the multiple renal arteries and SRA. Benedetti stated the similar results among one hundred and sixty-three patients with multiple renal arteries versus eight hundred and thirtyfive patients of the group of the SRA.

CONCLUSION:

The findings of this research work showed that renal allografts with the multiple renal arteries might present with high risk of related complications. Very meticulous methods of surgery should be in use for the transplantation to expand the pool of donor and to obtain best results.

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