

Successful Elongation of a Short Graft Renal Artery by a Gonadal Vein

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Abstract

Objectives: The objective of this presentation is to share our experiences with a successful reconstruction of a short graft renal artery using a gonadal vein, which occurred during a difficult laparoscopic donor nephrectomy.

Case Report: A 27-year-old man was referred to our clinic for a living-related renal transplant with a diagnosis of end-stage renal disease. The donor was with his mother. At last, a laparoscopic donor nephrectomy was planned. Massive intra-abdominal hemorrhage occurred during the dissection of renal artery. Urgent intervention was performed to maintain the patency of renal allograft and to stabilize the donor. Hemorrhage was brought under control. Donor nephrectomy was completed with a short remaining segment of renal artery. We decided to use the elongation of the graft renal artery using the gonadal vein of the same side was decided. End-to-end anastomosis was performed. After elongation of graft renal artery, anastomosis to internal iliac artery was performed. The transplant procedure was completed successfully. The kidney functioned immediately. Doppler ultrasound revealed that perfusion of the kidney was normal. The postoperative creatinine levels of recipient were in the normal ranges. Daily urine output was normal. There are not enough publications about elongation of graft renal artery using gonadal vein.

Conclusions: Elongation of a short remaining graft renal artery by using gonadal vein seems to be a simple, safe, and reliable method. This technique provides an alternative approach for the reconstruction of short renal arteries in living-donor kidney transplants.

Key words: Gonadal vein, Kidney transplant, Renal artery

Introduction

Renal transplant is the most effective treatment in end-stage renal disease. Living-donor transplants are being widely used, as organ need is increasing daily, whereas there are not enough deceased donors. Also, as minimally invasive interventions are being widely used and are becoming more popular because of quick recovery time, low postoperative pain, low complication rates, and low missed time from work, laparoscopic donor nephrectomy has become more preferred in renal transplants. This procedure has some drawbacks (eg, hard control of bleeding in major bleedings during surgery, risk of graft ischemia, injury or laceration of donor kidney artery, vein, or ureter). The objective of this case report is to share our experience of a successful reconstruction of a short graft renal artery by a gonadal vein, which occurred during a hard laparoscopic donor nephrectomy.

Case Report

A 27-year-old man was referred to our clinic for living-related renal transplant. He had a diagnosis of end-stage renal disease for 1 year and had been undergoing hemodialysis for 9 months. The donor was with his mother, she had a complete ABO match, 2 mismatches, and she was cross negative.

Laparoscopic left donor nephrectomy was planned. Massive intra-abdominal hemorrhage occurred during dissection of renal artery. Before clamping the

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renal artery, the injury occurred when the vascular staplers were pulled back during the trial of vascular stapler on the renal vein. Urgent intervention was performed to maintain the patency of renal allograft and to stabilize the donor. Renal artery was clamped and cut, renal vein was cut via a stapler. Hemorrhage was brought under control. Donor nephrectomy was completed and graft kidney was removed to back table, with a short remaining segment of renal artery (Figure 1). The right internal iliac artery segment of recipient was also short, limiting a successful transplant. Elongation of graft renal artery using gonadal vein of the same side was decided. End-to-end anastomosis was performed using 6/0 polypropylene (Figures 2,3). After elongation of graft renal artery, anastomosis to internal iliac artery was performed. The transplant procedure was completed successfully, and the patient was transferred to transplant unit.

Figure 1. Short Remaining Renal Artery



Figure 2. Left Gonadal Vein

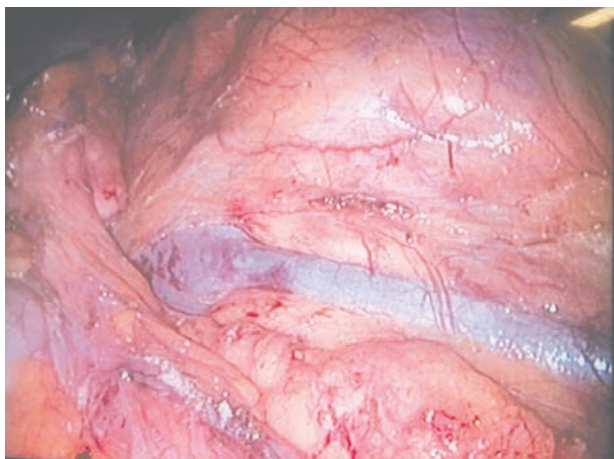
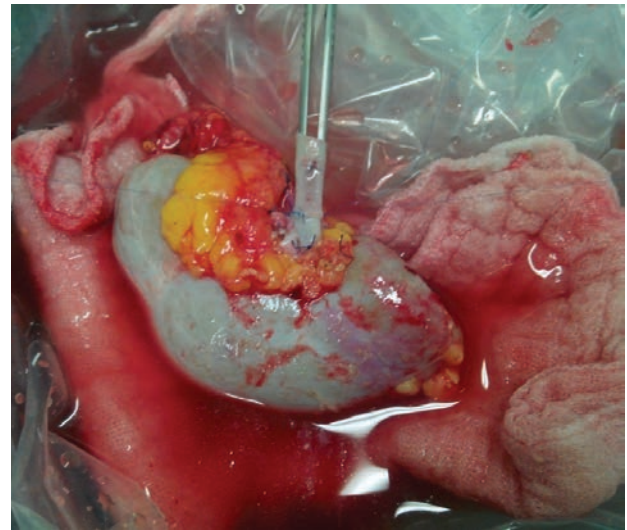


Figure 2. Anastomosis of Renal Artery and Gonadal Vein



The kidney functioned immediately. Doppler ultrasound revealed that the perfusion of the kidney was normal. The postoperative creatinine levels of recipient were within normal ranges, and there was no need for dialysis. Daily urine output was normal. There were no additional surgical problems, and the patient was discharged. There were no problems in graft functions during routine follow-ups for 8 months.

Discussion

There are numerous reports about elongation of a short renal vein by a gonadal vein, and it seems to be a safe and efficient method; however, there is a paucity of data about elongation of short renal artery by a gonadal vein.¹⁻³ In a previous study, the gonadal vein was used for anastomosis of parallel 3 polar arteries to external iliac artery by union on gonadal vein patch, and this method has brought a new perspective for approaching to multiple renal arteries.⁴ It is useful, especially in right laparoscopic donor nephrectomy, to elongate short right renal veins.⁵ Also, recipients in whom the gonadal vein is not preserved have been found to have similar urologic complication rates compared with other patients; for that reason, transplant surgeons should not hesitate to use a gonadal vein for the elongation of a renal artery or vein.⁶

In another study, the gonadal vein graft was used successfully to implant the polar renal artery during a living-donor renal transplant.⁷

According to technical problems because of vascular pathologies, sometimes prosthetic vascular implants can be used in renal allograft transplants. It is known that these grafts do not influence the renal functions on short-term and long-term follow-ups, but technical difficulties during implantation are stated.⁸ We emphasized that nonprosthetic vascular grafts (eg, the gonadal vein should be used instead of prosthetic ones because their biological nature and ease of handling). To elongate a short renal artery, use of an internal iliac artery should be a good choice. Elongation of short renal artery with internal iliac artery can anastomose with external iliac artery.

Possible complications because of the operation must be monitored. Especially, monitoring for aneurysms and stenoses is critical. In this perspective, postoperative isotope or computed tomographic angiography should be useful techniques to monitor possible aneurysm and stenosis.

Elongation of a short remaining graft renal artery by using gonadal vein seems to be a simple, safe, and reliable method. This technique provides an alternative approach for the reconstruction of short renal arteries in living-donor kidney transplants.

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