Laparoscopic Gonadectomy in a Kidney Transplant Patient with Pure Gonadal Dysgenesis
A Case Report

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BACKGROUND: Laparoscopy has been successfully used following renal transplantation for many procedures, including native kidney nephrectomy, revision of transplant ureters and cholecystectomy. Laparoscopic surgery has also been used recently to treat pelvic disorders in patients after renal transplantation, such as removal of endometriotic cyst and hysterectomy. In such cases, we must pay special attention to the anatomy of the renal graft transplanted into the pelvic cavity.

CASE: A woman received a kidney transplant at 7 years old, with her mother as the donor. At 19 years old, she was diagnosed with pure gonadal dysgenesis and began hormone replacement therapy and monitoring of tumor markers. At 23 years old, laparoscopic gonadectomy was performed under general anesthesia. Bilateral atrophic gonads were removed without any complications. The renal graft in the right hemipelvis did not obstruct the operation.

CONCLUSION: To our knowledge, this case is the first published report of laparoscopic castration in a patient with a sexual differentiation disorder and prior renal transplantation. (J Reprod Med 2009;54:655–658)

Keywords: castration, female; gonadal dysgenesis; laparoscopy; renal transplantation.

Laparoscopic gonadectomy can be performed safely in patients with pure gonadal dysgenesis and a history of renal transplantation.

Laparoscopy has been successfully used following renal transplantation for many procedures, including native kidney nephrectomy, revision of transplant ureters and cholecystectomy.\(^1\,^2\) Laparoscopic surgery has also been used recently to treat pelvic disorders in patients after renal transplantation, such as removal of endometriotic cyst\(^3\) and hysterectomy.\(^4\) In such cases, we must pay special attention to the anatomy of the renal graft transplanted into the pelvic cavity. Here we report our experience with laparoscopic surgery in a patient...
with a sexual differentiation disorder and a history of renal transplantation.

**Case Report**

A 23-year-old Japanese woman presented with no significant family medical history. She began extracorporeal dialysis by sclerotic glomerulonephritis at 7 years old. After 3 months, a kidney from her mother was transplanted into her right hemipelvis. Immunosuppressive drugs (cyclosporine, azathioprine and predonisolone) were administered after the operation, with predonisolone discontinued when she was 18 years old.

When the patient was 19 years old, she consulted our faculty for primary amenorrhea. The patient weighed 52 kg, and her height was 165 cm. Her perinatal, neonatal, childhood and family histories were unremarkable. Her breasts, external genitalia (clitoris and vagina) and uterine cervix were normally developed, and she had normal axillary and pubic hair. The uterine body was extremely small but normal in both shape and position. However, the adnexa were not detected by ultrasonography or magnetic resonance imaging. The patient’s testosterone level (77 ng/mL) was within the normal range for adult females, but her follicle-stimulating hormone serum concentration was extremely high (290 U/L). Chromosomal analysis of her peripheral blood leukocytes showed a karyotype of 46,XY.

The patient’s serum levels of α-fetoprotein (1.40 ng/mL) and β-subunit of human chorionic gonadotropin (undetectable) were normal. Administration of progesterone in combination with estrogen resulted in withdrawal bleeding.

The patient’s uterus grew gradually with hormone replacement therapy (HRT), as shown by ultrasonographs of her uterus before (Figure 1A) and 1 year after (Figure 1B) HRT. She was diagnosed with pure gonadal dysgenesis, and HRT and tumor marker monitoring were continued. It was explained to the patient that gonadectomy was necessary.

**Laparoscopic Gonadectomy**

At 23 years old, the patient agreed to have her gonads removed, and laparoscopic gonadectomy was deemed to be the most appropriate treatment. Four years were needed for her to understand the need for surgery.

In order to avoid damage to her transplanted kidney in the right hemipelvis, 3 trocars were inserted at subumbilical, left iliac midclavicular and lower abdominal midline positions. Although the renal graft had to be deflected for surgery on the reproductive organs (Figure 2A), this did not create any problems. The uterus and fallopian tubes were identified (Figure 2B), though no fimbriae were found (Figure 2C). The gonads were visible as streaks, and bilateral gonadectomy was performed without complications (Figure 2D). Microscopic examination revealed atrophic tissue with no malig-
nant potential in either gonad.

**Discussion**

Although a previous study documented 37 cases of safe and effective urologic laparoscopy in patients following renal transplantation,¹ to our knowledge, this case constitutes the first published experience with laparoscopic castration in a patient with pure gonadal dysgenesis and prior renal transplantation. Our results support previous findings that renal allograft function is not affected by laparoscopic procedures.

To avoid injury to the transplanted kidney, we carefully chose the positions at which we inserted the trocars. Since renal transplant patients have a history of surgery that contributes to the risk of pelvic adhesive disease and they also often undergo peritoneal dialysis, particular attention must be paid to the location of the transplanted kidney and the potential for pelvic adhesive disease when accessing the peritoneal cavity. We were able to insert trocars safely by using the bladeless Optiview system (Ethicon Endosurgery, Tokyo, Japan), in which insertion is possible with direct vision. Open laparoscopy is also recommended as a safe method. It is necessary to grasp the anatomic relations of the blood vessel of the renal graft and the ipsilateral gonadal vascular system on performing gonadectomy. It was not necessary to identify the landmark of blood vessel system by this surgery because the reproductive system was clearly visible. One of the authors (H.K.) is an expert on renal transplantation, and we were able to perform surgery with the cooperation of the transplant physician.

In conclusion, laparoscopic gonadectomy can be performed safely in patients with pure gonadal

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**Figure 2** Laparoscopic findings. (a) General view of right hemipelvis. r = renal graft. (b) The small uterus and fallopian tubes are visible. (c) Lack of fimbria formation on both fallopian tubes is evident. The arrow indicates the tip of the left fallopian tube. (d) Gonadectomy using a Ligasure vessel sealing device (Valleylab, Boulder, Colorado).
dysgenesis and a history of renal transplantation. Not only is allograft function not adversely affected by laparoscopy, laparoscopy also offers magnification of anatomy, decreased wound-related problems and rapid return to oral intake, allowing continuation of immunosuppression.

References