



CASE EXAMPLE

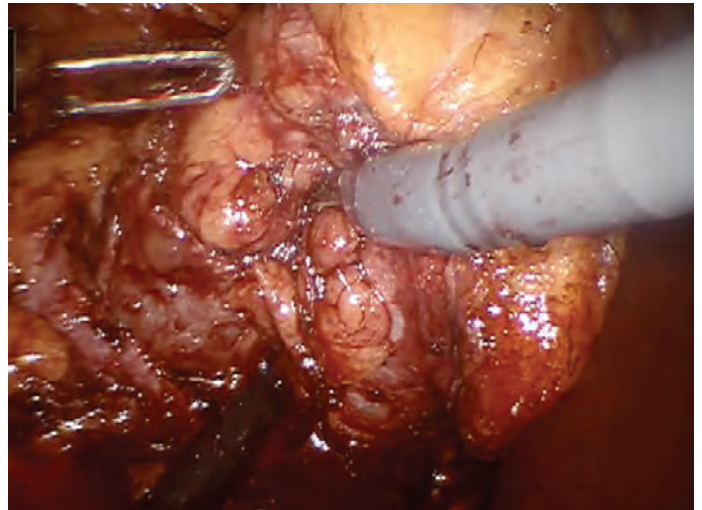
## AmnioFix<sup>®</sup> used in Robotic Partial Nephrectomy

Doctor/Practitioner Information

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RENAL TUMOR



## INTRODUCTION

# AmnioFix<sup>®</sup> used in Robotic Partial Nephrectomy

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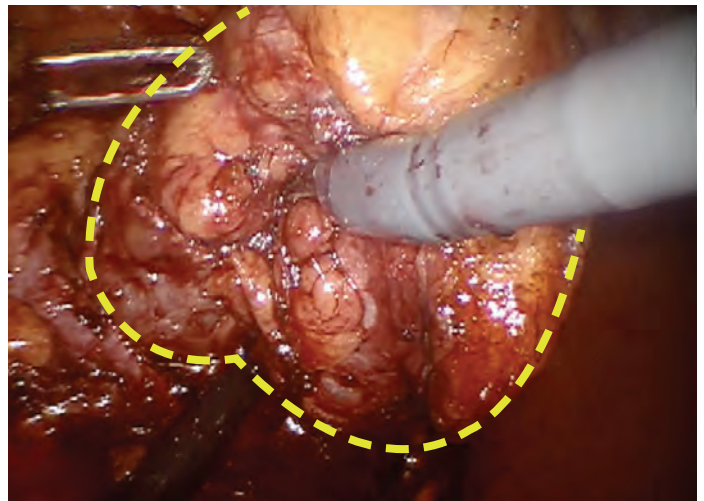
## CHALLENGE: NEPHRON SPARING AND PRESERVATION IN PATIENT WITH BILATERAL RENAL TUMORS

A central challenge in the management of renal tumors is extirpation of the tumor while maximizing nephron sparing when possible. Significant advancements in surgical technique and tools have been incorporated to additionally decrease renal function loss, initially by minimizing ischemia time, and more recently by enucleation of the tumor when possible. Maximizing nephron preservation yields better clinical outcomes for the patient from minimizing cardiovascular risk to delaying the future need for dialysis.

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## CLINICAL HISTORY

A 63 year-old male presents with bilateral renal tumors. The largest tumor measured 6.5 cm (Figure 1) and was located on the anterior mid-pole of the right kidney; two smaller tumors less than 1 cm were located directly adjacent to the main tumor. There were also two smaller tumors measuring 3.5 cm and 2 cm on the contralateral side, which would be addressed in a separate procedure. The patient was counseled on treatment options; a partial nephrectomy was technically feasible, and the patient agreed to robotic partial nephrectomy procedure.



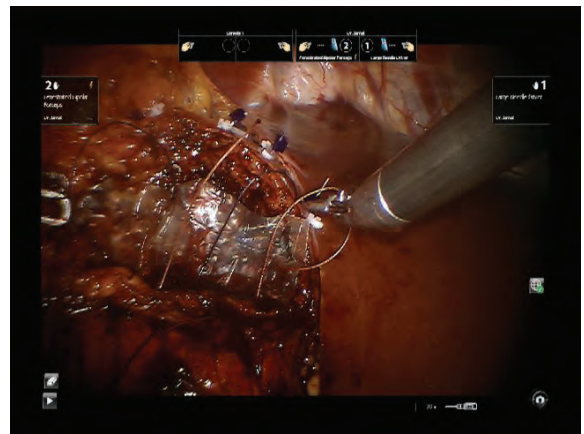
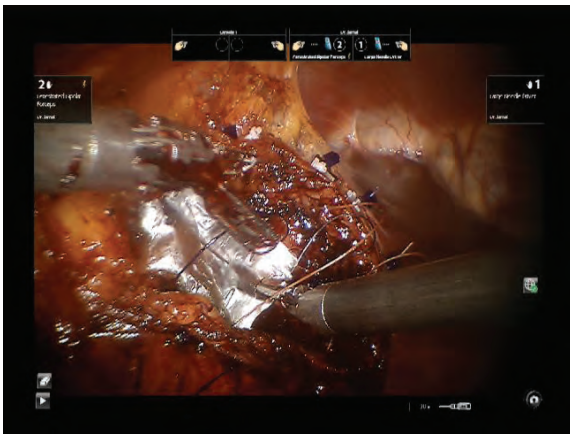
**Figure 1**  
Renal Tumor

# SURGICAL INTERVENTION 1

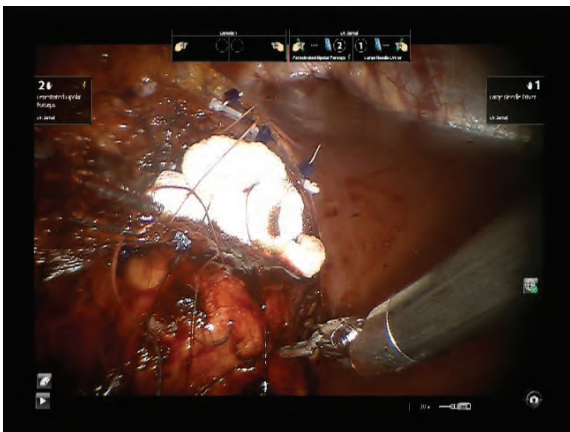
Since the patient would have a second procedure to address tumors on the left kidney, the goal was to optimize renal function by completing portions of the surgical procedure prior to clamping to reduce warm ischemia time, a combination of enucleation and partial nephrectomy, and application of AmnioFix grafts to enhance healing at the site.

Once the anatomy was dissected and the kidney and tumor were exposed, the margins of the tumor were easily visible due to its size. The cortex of the kidney around the tumor was scored with cautery and two bulldog clamps were secured on the renal artery. The tumor was extirpated and the base of the resection site was biopsied for frozen section. The partial nephrectomy bed was cauterized on the periphery, and 3-0 absorbable suture was used to over sew the central defect including bleeding vessels and entry into the collecting system. Four renorrhaphy sutures were then placed through the capsule of the kidney and a 2 cm x 12 cm AmnioFix graft was cut in half and placed side-by-side under the sutures, directly in contact with the parenchyma. My goal for using the AmnioFix graft is to promote angiogenesis and blood flow, modulate inflammation, and enhance healing at the site. A Surgicel® cigar was placed on top of the AmnioFix and Surgiflo® foam was also used to fill in the gaps and help with hemostasis. Lapra-Ty® clips were then used to secure all sutures and to close the defect (Figures 2-5).

With the renorrhaphy complete, the kidney was unclamped after 22 minutes of ischemia. The renorrhaphy was then observed for 5-10 minutes under low intra-abdominal pressure (5 mm Hg) to assess hemostasis. Once satisfied with the repair, Gerota's Fascia was closed with a running absorbable suture. A Blake® drain was then placed, and port sites and extraction site were closed. The patient was discharged post-op day 1.



**Figures 2 & 3**  
Two 2 cm x 6 cm AmnioFix grafts placed side by side



**Figures 4 & 5**  
Surgicel® cigar and Surgiflo® foam placement on top of AmnioFix

## FOLLOW UP

Creatinine levels were analyzed at one and three months post-op. There was no significant change in creatinine level, which remained stable at 1.1mg/dL pre- and post-operatively.

## SURGICAL INTERVENTION 2

Three months later, the patient returned for the second procedure to address the two tumors on the left kidney. The same surgical approach described previously was taken for the left kidney. Robotic partial nephrectomies were performed to remove a 3.5 cm tumor from the lower pole and a 2.2 cm tumor from the anterior upper pole. Again, a 2 cm x 12 cm AmnioFix graft was cut in half, with one piece placed in each defect and closed using the same techniques described in the prior procedure. The patient was discharged post-op day two without complication or incident, but was referred for genetic testing to the NIH due to his presentation with bilateral renal tumors, as well as a microscopic foci of additional tumors in the adjacent renal parenchyma.

## FOLLOW UP

A CT scan at the four month follow-up showed no cancer recurrence, and additional analysis showed very minimal Creatinine (1.2 mg/dL) and eGFR change. This was remarkable considering the patient underwent three partial nephrectomies.

## CONCLUSION

A combination of good surgical technique, minimal warm ischemia time, an effort to conserve parenchyma, and AmnioFix were able to preserve virtually all renal function in this challenging patient. As minimally invasive surgeons, our motivation to go to such lengths is to optimize patient outcomes as they relate to oncological control while simultaneously improving patient quality of life. To the extent of the latter, this relates to decreasing patient morbidity by improving renal function and thereby reducing cardiovascular disease, renal failure, delay of hemodialysis, all of which also add to the expense of the healthcare system.

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