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CT Appearance of Absorbable Suture Clips Following Nephron Sparing Surgery

Jennifer L. Bau, M.D., David Hartman, M.D., and Matthew Janiga, M.D.

Absorbable suture clips used during partial nephrectomy may be recognized as small hyperdensities near the excision site at 5 months after implantation. They may be completely resorbed and no longer visible at 11 months after implantation.

Case Report

A 77-year-old woman underwent a left partial nephrectomy with local excision of the mass for renal cell carcinoma (Figure 1). LAPRA TY absorbable suture clips (Ethicon Endosurgery, Cincinnati, OH) were utilized in apposing the normal renal parenchyma where the tumor had been excised. Pathology of the renal lesion demonstrated a typical clear cell renal cell carcinoma. Follow-up CT 5 months later demonstrated post surgical changes including three 1mm hyperdensities near the periphery of the kidney adjacent the tumor excision site (Figure 2). These densities corresponded to the LAPRA TY absorbable suture clips utilized during the partial nephrectomy. Subsequent follow-up CT 6 months later (11 months after surgery) showed that these densities were no longer present (Figure 3).

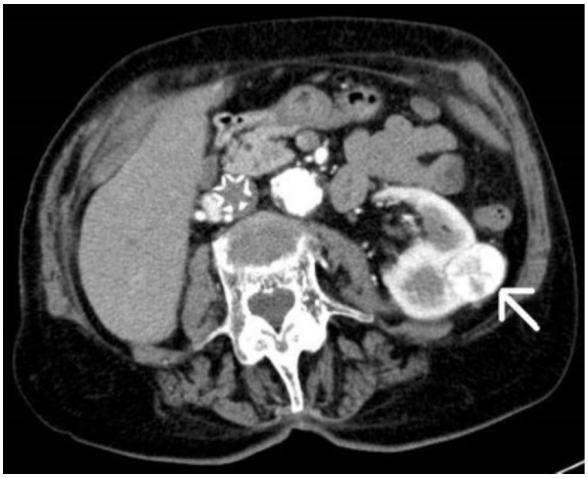

Figure 1. 77-year-old woman with renal tumor. Pre-operative CT. There is a 2.8 cm strongly enhancing, sharply marginated mass (arrow) arising from the left kidney.

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Abbreviations: CT, computed tomography; MRI, magnetic resonance imaging

Jennifer L. Bau, M.D. (Email: jbau@hmc.psu.edu), and David Hartman, M.D., are in the Department of Radiology, Milton S. Hershey Medical Center, Hershey, PA, USA.

Matthew Janiga, M.D., is in the Department of Urology, Milton S. Hershey Medical Center, Hershey, PA, USA.

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Figure 2. Unenhanced CT of the left kidney at the level of the excised mass, 5 months following tumor excision. The scan is at the same anatomic level as Figure 1. There are three small densities (arrows) in the periphery of the left kidney, adjacent to the surgical defect (D).

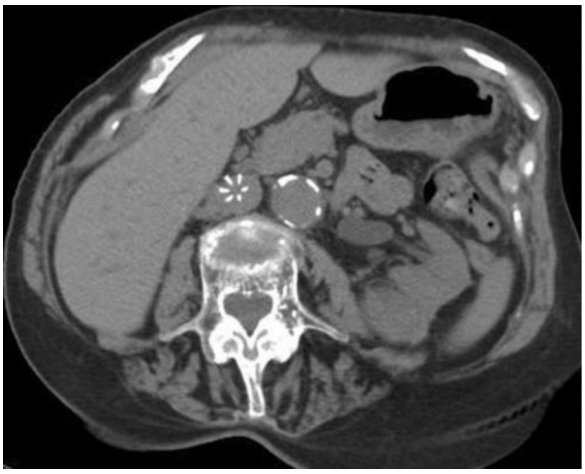

Figure 3. Unenhanced CT of the left kidney at the level of the excised mass, 11 months following tumor excision. The scan is at the same level as Figures 1 and 2. The three small densities seen in Figure 2 are no longer present.

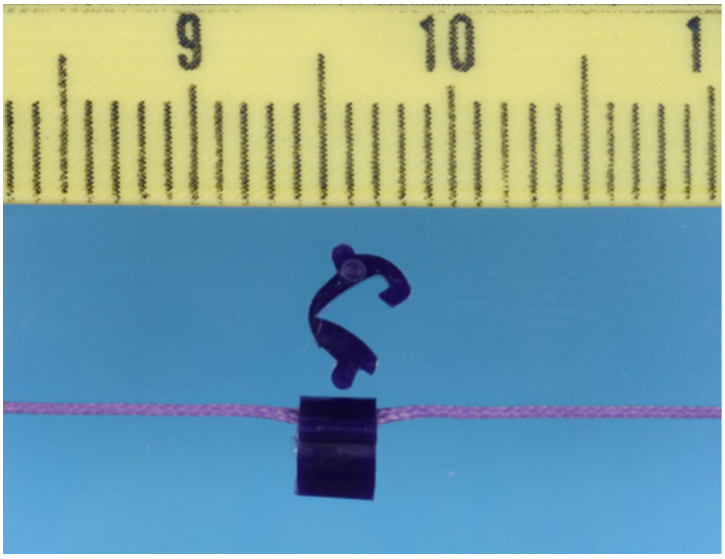

Figure 4. Lapra Ty absorbable suture clips (Ethicon Endosurgery, Cincinnati, OH). One clip is open, and another clip has been appied to a suture. The centimeter scale indicates the size.

Discussion

The advent of advanced renal imaging and increased imaging utilization have contributed to the rise in incidentally discovered small renal masses. Many small tumors are managed using nephron sparing techniques which include heminephrectomy, segmental resection, wedge resection, transverse resection, and enucleation [1].

Lapra Ty absorbable suture clips (Figure 4) may be used to anchor the sutures approximating the remaining normal renal parenchyma (Figure 5). Once the mass is excised, bleeding vessels are then sutured and any collecting system defect is closed (Figure 5B). The parenchymal defect is then filled with bolsters of Surgicel (Johnson & Johnson Gateway) (vicryl) absorbable mesh (Figure 5C). The surrounding parenchyma is compressed against the bolsters with vicryl sutures for improved hemostasis.

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The ends of the vicryl sutures are held in place with a LapraTy absorbable suture clip (Figure 5D). As the sutures across the excision site are tightened, the edges of the kidney are drawn closer together (Figure 5E).

The Lapra Ty clip is composed of a sterile polymer poly(p-dioxanone). It is nonantigenic, nonpyrogenic, and elicits only a slight tissue response during absorption. The general mechanism of in vivo degradation of polydioxanone is by hydrolysis. According to the Lapra Ty package insert, the hydrolyzed polymer is ultimately eliminated from the body, primarily through the urine.

We were unable to find other reports describing the radiological appearance of Lapra Ty absorbable suture clips following nephron sparing surgery. These suture clips may be visualized as small hyperdense foci at the

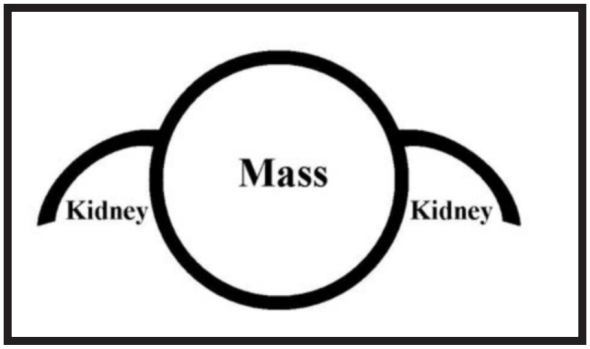

Figure 5A. Diagrammatic representation of the use of absorbable suture clips in nephron-sparing renal tumor resection. Kidney with mass.

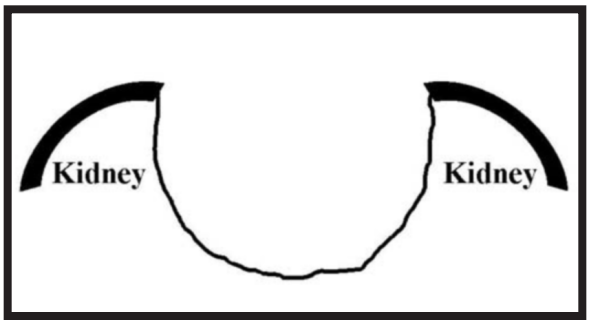

Figure 5B. The mass is removed, bleeding vessels are sutures, and any collecting system defect is closed.

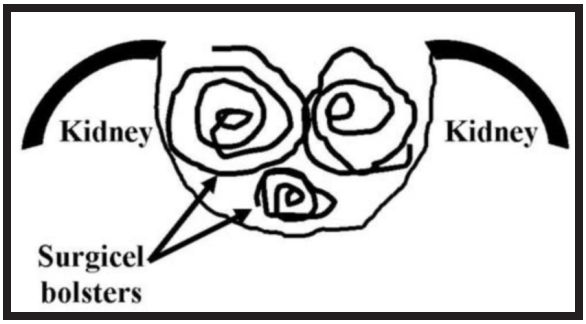

Figure 5C. The parenchymal defect is then filled with bolsters of vicryl absorbable mesh (Surgicel).

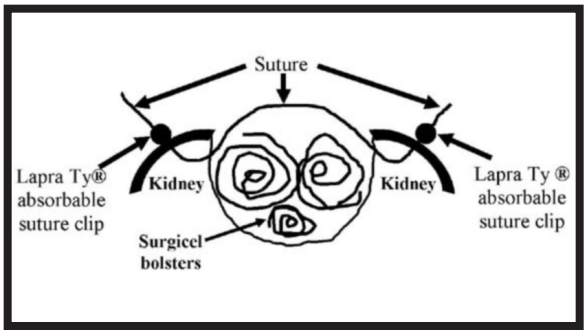

Figure 5D. The surrounding parenchyma is compressed against the bolsters with vicryl sutures for improved hemostasis. The ends of the vicryl sutures are held in place with an absorbable suture clip (Lapra Ty).

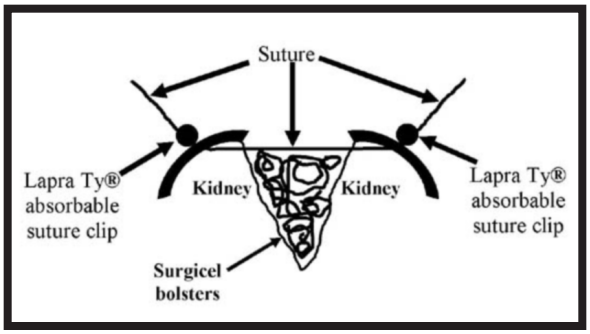

Figure 5E. Suture across excision site is tightened, and the edges of the kidney are drawn closer together.

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edge of the excision site (Figure 2). In our case, they were visable 5 months following tumor excision. It is important to recognize these suture anchors as a normal, anticipated post operative change rather than new areas of calcification on noncontrast enhanced CT scans or new areas of enhancement on enhanced CT scans [2]. Postsurgical calcification or enhancement may suggest local recurrence of tumor or granulomatous response to foreign material introduced during surgery [3]. True local recurrence at the excision site generally demonstrates a mass with marked early contrast enhancement during the corticomedullary phase [2].

With time, the Lapra Ty absorbable suture clips should be absorbed and no longer visible. The exact time course for complete absorption of the surgical clips is unknown, but in our case, they were not visible by CT at 11 months after implantation.

References

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