

Video Article

Single Port Donor Nephrectomy

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Abstract

In 2007, Rane presented the first single port nephrectomy for a small non-functioning kidney at the World Congress of Endourology. Since that time, the use of single port surgery for nephrectomy has expanded to include donor nephrectomy. Over the next two years the technique was adopted for many others types of nephrectomies to include donor nephrectomy. We present our technique for single port donor nephrectomy using the Gelpoint device. We have successfully performed this surgery in over 100 patients and add this experience to our experience of over 1000 laparoscopic nephrectomies. With the proper equipment and technique, single port donor nephrectomy can be performed safely and effectively in the majority of live donors. We have found that our operative times and most importantly our transplant outcomes have not changed significantly with the adoption of the single port donor nephrectomy. We believe that single port donor nephrectomy represents a step forward in the care of living donors.

Video Link

The video component of this article can be found at <https://www.jove.com/video/2368/>

Protocol

Single Port Donor Nephrectomy:

1. Place patient in the right lateral decubitus position with left side up
2. Operating surgeon will stand facing abdomen with the assistant camera driver standing to the surgeons right and caudad
3. Measure 5 cm incision over umbilicus on stretch
4. Create incision at umbilicus and enter the abdominal cavity.
5. Place the Alexis Wound Retractor
6. Place Appropriate Laparoscopic Ports in Gel Point Seal (2 5mm ports and 1 15mm port) as disrected and shown in video
7. Place Gel Point seal on Alexis Retractor and Insufflate the abdomen
8. Mobilize the Descending Colon off of the Retroperitoneum
9. Mobilize the Spleen from lateral to medial to create plane between the spleen and the upper pole of the kidney
10. Dissect the Ureter and Gonadal Vein from the level of the Iliac vessels up to the lower pole of the kidney
11. Follow the Gonadal Vein to the Renal Vein in the area of the Hilum. The Gonadal vein can be ligated and divided near the Renal Vein if needed
12. Identify and divide any Lumbar Veins
13. Identify and Divide the Adrenal Vein between clips
14. Dissect the Renal Vein Circumferentially
15. Identify the Renal Artery and dissect it circumferentially
16. Mobilize the entire kidney off of the retroperitoneum
17. Place a 5-12mm Port where the lower 5mm port had been placed in the Gel Point Seal
18. Ligate and divide the Ureter and Gonadal Vein at the Iliac Vessels with an Endo-GIA stapler
19. Ligate the renal artery with an Endo-TA vascular stapler and then divide with endoshears
20. Ligate and divide the renal vein with an Endo-GIA stapler
21. Place the kidney in and large Endocatch bag
22. Remove the Gel Point Seal and the Alexis Retractor
23. Remove the kidney from the Abdominal Cavity
24. Replace the Gel Point Seal
25. Survey for hemostasis and replace the Descending Colon in the appropriate location along with the spleen
26. Close the abdominal wall fascia and then the skin incision

27. Place dressing

Discussion

The Single Port Donor Nephrectomy is a viable next step in the evolution of donor nephrectomy. At times, steps in the procedure have to be accomplished out of order due to the challenges inherent in the single port which limits side to side retraction and mobility as discussed in the video. The cosmesis is excellent and patients return to activities very quickly. As the procedure evolves new instruments will be developed that will aide in the accomplishment of more of more and more complex tasks through the single port entry.

Disclosures

Dr David Leeser and Dr Joseph Del Pizzo both teach single port techniques at courses sponsored by Applied Medical.

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