Controlled survival study of the effects of Tisseel or a combination of FloSeal and Tisseel on major vascular injury and major collecting-system injury during partial nephrectomy in a porcine model.

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Abstract:

PURPOSE: We report the results of a controlled survival study in a porcine model investigating Tisseel or a combination of FloSeal and Tisseel in dealing with vascular and collecting-system injury during partial nephrectomy.

MATERIALS AND METHODS: We performed an open right lower-pole partial nephrectomy on 15 large female pigs. The defect was repaired using standard open techniques (N = 5; controls), Tisseel only (N = 6; group I), or FloSeal followed by Tisseel (N = 4; group II). A Jackson-Pratt drain was placed. Nephrectomy and retrograde pyelography were performed at 1 week.

RESULTS: Operative times were shorter in both study groups, achieving statistical significance in group I (P = 0.008). Warm-ischemia times were significantly improved in both study groups (P = 0.029 and P = 0.00005 in groups I and II, respectively). Time to hemostasis was significantly shorter in group II only (P = 0.002) but approached significance in Group I as well (P = 0.09). Estimated blood loss was not significantly different from the controls in either group. When Tisseel was placed alone after hilar control, hematoma formation under the Tisseel was noted on release of the hilar clamp. After 1 week, there was one urinoma and three urine leaks in the control group. In group I,

there was one urinoma and four urine leaks, and there was only one urine leak and no urinomas in group II. There were no hematomas in any of the groups.

CONCLUSIONS: Tisseel alone is not adequate for either hemostasis or management of major collecting-system injury. FloSeal capped with Tisseel appears sufficient to control major vascular and collecting-system injuries without adjunctive surgical measures. A proposed technique for laparoscopic partial nephrectomy without reconstructive techniques is presented that warrants clinical study.