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doi:10.1016/j.eururo.2007.04.003

Rebuttal from Author re: Jens-Uwe Stolzenburg, Evangelos N. Liatsikos. Laparoscopic Partial Nephrectomy: What about Hilar control? Eur Urol 2007;52:956–8

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We appreciate the editorial from Stolzenburg and Liatsikos [1]. We agree with them that laparoscopic partial nephrectomy (LPN) is a challenging procedure. Indeed, a margin-free excision of the tumour, followed by closure of the collecting system and haemostasis must be performed in <30 min to avoid irreversible warm ischaemic kidney damage [2]. In their editorial, Stolzenburg and Liatsikos [1] have raised many technical points. A few of them are still controversial. We would like to discuss these key points.

Which is the best approach during LPN?

Naturally, the extraperitoneal approach was first proposed to mimic open surgery. The extraperitoneal approach has the advantage of allowing fast access to the renal artery. Furthermore, postoperative complications, should they arise, are easier to manage when the initial procedure has been done by this approach. A urinary fistula is well tolerated by the patient and can be easily managed by ureteric catheterisation and prolonged retroperitoneal drainage. Postoperative bleeding is also better tolerated and the limited retroperitoneal space helps tamponade, thus preventing further bleeding.

On the other hand, the retroperitoneal space is narrow, making triangulation and thus suturing, a crucial step of the LPN, more difficult. Gill et al showed that blood loss, perioperative complications, analgesic requirements, and histologic outcomes were comparable between the transperitoneal and

retroperitoneal approaches [3]. In our experience we prefer the transperitoneal approach except when the tumour is posteriorly located.

Do we always need to clamp the pedicle?

As mentioned by Stolzenburg and Liatsikos [1], most laparoscopists started without clamping the pedicle. It is feasible for small exophytic tumours and we did perform a few cases like that early in our series. However, we now routinely clamp the pedicle for every tumour irrespective of its size or location. Clamping the renal pedicle reduces blood loss and provides a bloodless field during tumour excision, enabling accurate visualisation of the tumour and its safe resection [4,5]. For these reasons, we strongly recommend clamping the pedicle even for small exophytic tumours.

How to clamp the pedicle?

Three different techniques are possible: the Satinsky clamp, the tourniquet technique, and the bulldog clamp. Gill described the “en bloc clamping” of the pedicle with the Satinsky clamp. This technique has the theoretical advantage of being fast because less dissection of the pedicle is required. However, a complete dissection of the kidney is necessary to exclude a polar artery. Indeed with *en bloc* clamping, if a polar artery is missed and not clamped, this results in parenchymal flow overpressure leading to excessive bleeding during tumour excision. Furthermore, the *en bloc* clamping technique is still controversial because it seems to lead to more severe ischaemic injuries compared to only arterial clamping [6]. The Satinsky clamp allows the “on-demand” clamping technique recently described by Bollens et al [7]. This technique to reduce warm ischaemia time (WIT) needs further evaluation because it seems to be associated with a higher complication rate. On the other hand, the use of a Satinsky clamp has the disadvantage of making one port unusable during the crucial steps of the LPN and the handle of the Satinsky clamp often gets in the way of the working ports, impeding suturing.

The tourniquet technique necessitates that the tourniquet be applied snugly around the vessels and

DOIs of original articles: 10.1016/j.eururo.2007.03.060,
10.1016/j.eururo.2007.04.003

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often needs manipulation during surgery to be effective. It has the advantage of being cheap and atraumatic.

Personally we prefer the use of bulldog clamps, which can be well adapted to laparoscopy and are easy to apply. They allow easy arterial clamping alone to reduce the warm ischaemia injuries [6]. However, to be safe the pedicle dissection for this “single” clamping must be minimal and smooth to limit the risk of vessel injury and arterial spasm.

How to excise the tumour?

According to us, harmonic scalpel or hot shears must be avoided. Indeed, they burn the parenchymal section, which makes the differentiation between the normal renal tissue and the tumour difficult or impossible. Hence, one can easily enter into the tumour without recognising it. Furthermore, the use of such devices produces a great deal of smoke, further impeding the vision during tumour excision and thus increasing the risk of positive margins.

A laparoscopic cold knife can be used for polar partial nephrectomy, but the straight blade is not adapted for cuneiform resection of a tumour. For all these reasons, we systematically use cold scissors during tumour resection.

How to perform haemostasis and closure of the collecting system?

Like Stolzenburg and Liatsikos [1], we recommend the use of sutures to close the collecting system and perform haemostasis. A 2.0 Vicryl running suture on the tumour bed allows us to achieve both at the same time.

To improve haemostasis some authors recommended the use of an argon beam. It could be used only on an exophytic tumour when the collecting system has not been opened. Indeed, if the argon beam is used after the collecting system is sutured, it risks burning the sutures and thus making them ineffective. If used before the collecting system is closed, the parenchymal section will be charred and fragile. A watertight closure of the collecting system is then almost impossible.

Sealant can be helpful during LPN. In a nonrandomised study, Gill showed that FloSeal[®] (Baxter) reduces postoperative bleeding and complications [8]. We recommend its use, at least for all deep tumour resections. The addition of a bolster aids compression and haemostasis further and is simple and cost effective; we routinely use one. Fibrin glue has been shown to improve haemostasis and reduce the risk of urinary fistula as shown in an animal study [9].

When we started our early unclamping technique, reported recently [10], we thought that we

would see an increase in blood loss. We were surprised to observe that the operative blood loss was not significantly different; on the contrary, the postoperative bleeding was significantly lower when we performed this early unclamping. This technique allows us to see an active bleeding area on the tumour bed, thus enabling the placement of additional haemostatic sutures. Such an uncontrolled arterial branch cannot be sutured when the clamp is removed after parenchymal closure, leading to delayed bleeding and sometimes necessitating blood transfusion postoperatively.

How to reduce WIT time?

Different ways have been described to reduce WIT. The use of clips can avoid knotting during LPN; however, this technique allows only a moderate reduction of WIT. Late clamping [7] or early unclamping [10] is more efficient and allows a significant reduction of WIT, <15 min, which makes all the techniques of cold ischaemia described previously unnecessary and saves on operating time [11,12].

All these key points discussed allow us to perform a standardised and reproducible technique. Today the laparoscopic approach to perform partial nephrectomy is, in our experience, the gold standard, and we have performed 97% of our partial nephrectomies in this manner during the last 4 yr.

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doi:10.1016/j.eururo.2007.04.096