

## ORIGINAL ARTICLE

# Intraperitoneal catheter drainage of lymphocele: an outpatient procedure

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## Keywords

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## Summary

Laparoscopic marsupialization of lymphocele carries 13% recurrence rate, 6% injury to other organs, 12% omentoplasty, 6% open conversion and 1.8 average hospital days. A novel, simplified technique of intraperitoneal catheter drainage of lymphocele is described. Under ultrasound guidance and using the Seldinger technique, a 13F Hickman catheter was introduced into the lymphocele and connected subcutaneously to a small peritoneal window performed 5 cm apart. During the last 8 years the procedure was performed under local anesthesia in 14 patients on an outpatient basis with success (e.g. resolution of both hydro-nephrosis and lymphocele). One wound infection required removal of the catheter without recurrence. In another patient laparoscopy showed retraction of the catheter under the peritoneum as cause for lymphocele recurrence. In all cases absence of injury to the GU tract was confirmed by absence of extravasation of indigo carmine given intravenously. Intraperitoneal catheter drainage of post-transplant lymphocele is an effective outpatient procedure. It avoids the drawbacks of general anesthesia required by open and laparoscopic marsupialization procedures and deserves to be evaluated in a multicenter study.

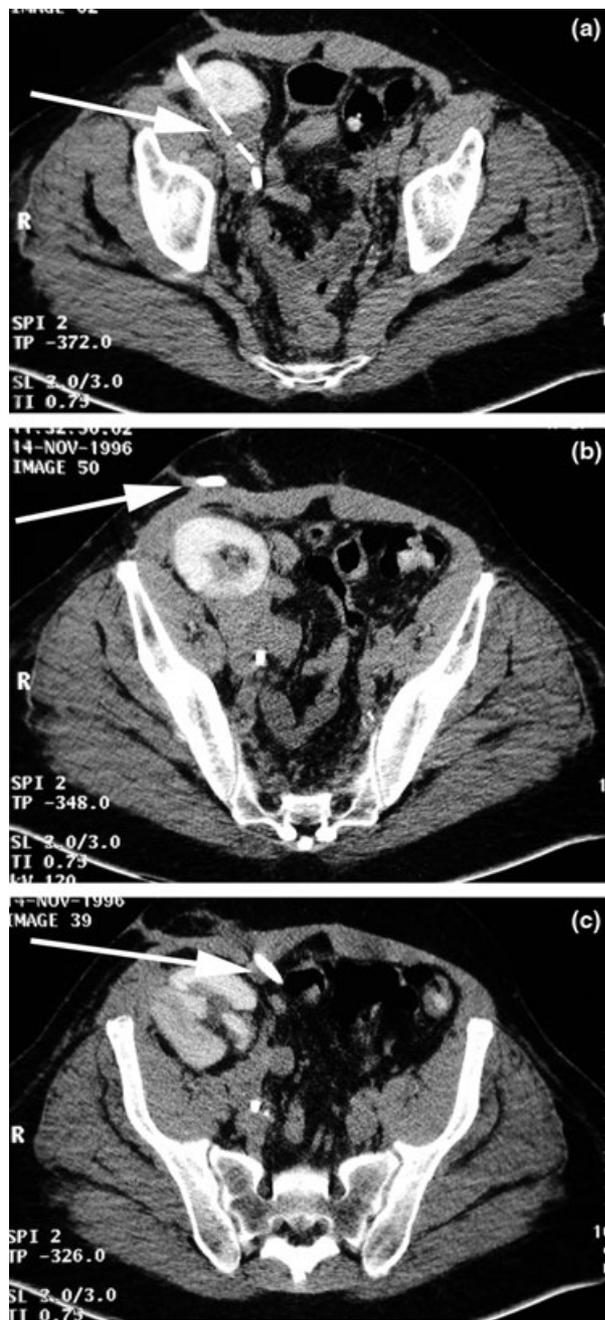
## Introduction

Lymph fluid accumulating around the renal allograft may occur as frequently as 16% [1]. Most lymphoceles are asymptomatic and may remain unrecognized. Because of size and location, some can manifest by ipsilateral edema, deep venous thrombosis, bladder displacement, or transplant malfunction and require drainage. Needle aspiration, external drainage, injection of sclerosing solution are fraught with a high recurrence rate and complications. Open intraperitoneal marsupialization was the procedure of choice, but required 3–4 days of hospital admission. Laparoscopic drainage has gained popularity because of the minimal discomfort and the rapid return to normal activity by the patient. Both procedures require general anesthesia and extensive dissection.

We report on a novel technique of lymphocele drainage which has been performed under local anesthesia, on an outpatient basis in 14 patients.

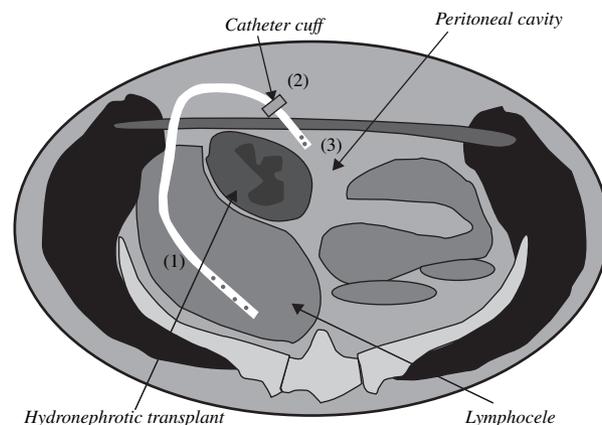
## Technique

The lymphocele was located during the operative procedure by a sterile 3.5 MHz ultrasound probe (ATL 3000; Advance Technology Lab, Bothell, WA, USA). Transduction was by means of jelly in the sleeve and normal saline flushed on the operative field. The lymphocele was then aspirated by a 18 gauge spinal needle. The clear fluid under tension was sent for creatinine and gram stain. Two ampules of indigo carmine (American Regent Lab, Shirley, New York) were given intravenously to stain the urine blue. Thus any injury to the excretory system of the transplanted kidney would result in stained lymphocele fluid and would be recognized immediately and the procedure aborted. In all cases the fluid aspirated remained clear. A guide wire was then introduced into the lymphocele. Using the Seldinger technique, a splitting introducer was placed over the guide wire and advanced into the lymphocele. Both were moved back and forth



**Figure 1** CT views showing the three portions of the catheter: inside the lymphocele (a) in the subcutaneous area (b) and in the peritoneal cavity (c).

and in circular motion to destroy the loculations within the lymphocele and were replaced by a 13.5 F Hickman catheter (Bard Access Division, Salt Lake City, UT, USA). The position of the catheter within the lymphocele was checked by sonography [Fig. 1a]. An incision, medial and cephalad to the transplant scar was performed, and by muscle splitting carried to the peritoneum, which was



**Figure 2** Schematic CT view of the intraperitoneal catheter with its three segments: inside the lymphocele (1), subcutaneous (2) and intra-peritoneal (3).

then opened. The drainage catheter, transected 2 cm distal to the Teflon cuff, was brought subcutaneously into the incision using the kit tunneler [Fig. 1b] and allowed to drain into the peritoneal opening [Fig. 1c]. The cuff was secured in place extraperitoneally. Both incisions were closed with absorbable material. The decompressed transplant usually diuresed copiously. A schematic drawing of the catheter on a computed tomographic cut is shown on Fig. 2. All patients were discharged the same day.

**Results**

During our early experience, one patient developed wound infection immediately after transplantation, which resolved with removal of the catheter. The lymphocele did not recur. Another patient required laparoscopic drainage following retraction of the catheter under the peritoneum. This complication was averted in the last 10 cases by tagging the Teflon cuff to the extraperitoneal structures and leaving 2 cm of catheter in the intraperitoneal position. There was no conversion to open drainage in this small series. Follow-up ranging from 2 to 8 years has not revealed any recurrence.

**Discussion**

In a recent questionnaire study of 84 centers within the United States, complications were reported to occur in 4% of patients undergoing lymphocele drainage, with injuries to the ureter, the bladder and the epigastric artery, laryngospasm and urinary retention [2]. Omentoplasty was performed in 12% and recurrence of the lymphocele requiring a second operation occurred in 13%. Open conversion was necessary in 6% of the cases.

The mean operative time was 65 min and blood loss was 39 cc. Hospital stay averaged 1.8 days [3].

Peritoneal marsupialization of a deep lymphocele in an obese patient would be accompanied by a much higher rate of failure as suturing the peritoneum to the lymphocele wall would be very difficult. The failure could also result from the impossibility to drain all the loculations within the lymphocele or blockage of the marsupialization opening. These drawbacks, on the contrary, can be avoided easily by the intraperitoneal catheter technique. Catheter drainage has been described recently in two patients followed for 21 months. Under laparoscopy and intraoperative ultrasonography the lymphocele was drained by two internalized catheters. The procedure lasted 3 h in both cases [3]. Our novel technique of internal catheter drainage avoids the drawbacks of general anesthesia, lengthy operation, recurrence of lymphocele and is successful in 13 cases, i.e. 92.8% of the cases. It compares

very favorably if not better than the 'gold standard' open and laparoscopic procedures and can be added to the armamentarium of the transplant surgeon.

## References

1. Bry J, Hull D, Bartus SA, Schweizer RT. Treatment of recurrent lymphoceles following renal transplantation. Remarsupialization with omentoplasty. *Transplantation* 1990; **49**: 47.
2. Gill IS, Taylor RJ, Stratta RJ, Grune MT. Trends in the current management of symptomatic post transplant lymphocele: a national survey. Abstract Book. Annual meeting of the American Society of Transplant Surgeons, May 29–31, 1996.
3. Matin SF, Gill IS. Laparoscopic marsupialization of the difficult lymphocele using internalized peritoneal dialysis catheter. *J Urol* 2000; **163**: 1498.