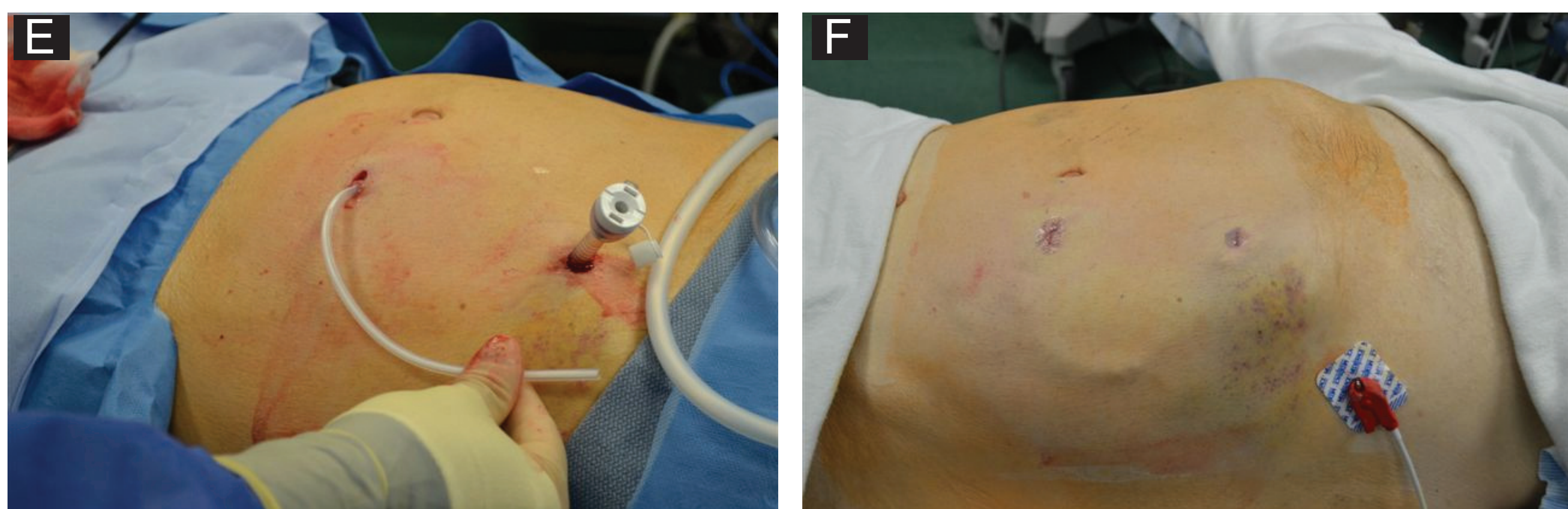
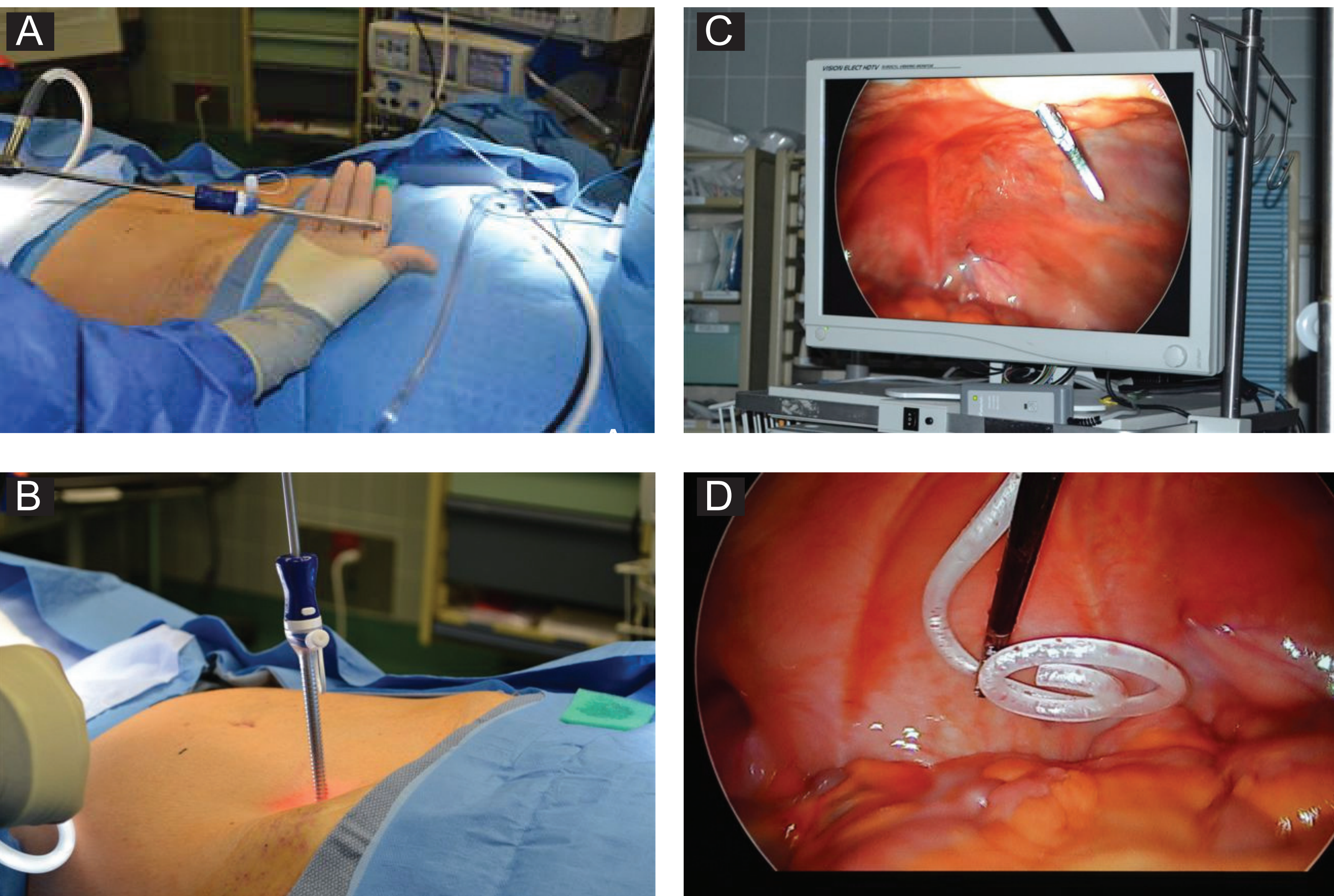


## Introduction

Peritoneal dialysis catheters can be either embedded or externalized. Embedding peritoneal dialysis catheters facilitates healing, reduces supply costs and nurse labor hours for exit site care, catheter flushing, and patient education.<sup>1</sup> Embedding the peritoneal dialysis catheter decreases the risk of improper exit site and catheter care and trauma prior to healing. Figure 1 demonstrates the placement of the embedded catheter.

Preparing for embedded catheters requires a concerted effort from the end-stage renal disease (ESRD) team. Peritoneal dialysis nurses should work diligently with the nephrologist, surgeons, pre-ESRD educators, and patients to ensure peritoneal dialysis catheter placement approximately 4-8 weeks prior to the initiation of peritoneal dialysis and the start of peritoneal dialysis training. Externalized catheters require maintenance, nurse labor hours, and pretraining education for patients to ensure proper exit site and catheter care.

Figure 1. Placement of the Embedded Peritoneal Dialysis Catheter



Figures 1A-F show the surgical procedure to embed a peritoneal catheter.

Figure 2. Image of an External Peritoneal Dialysis Catheter



## Objective

To examine the process prior to catheter placement and the infection rates after placement among patients receiving embedded versus externalized peritoneal dialysis catheters.

## Methods

- During the period of October 2013 to July 2014, 9 peritoneal dialysis catheters were placed in patients of a large dialysis organization facility in Texas.
  - 4 embedded
  - 5 externalized
- The process prior to catheter placement was compared between the 2 groups of patients.
- All patients were monitored for exit site infection and catheter care for 9 months following catheter placement.

## Results

- There were no infections noted during the study time period in either patient group.
- A comparison of the process prior to admission for peritoneal dialysis catheter placement is shown in Table 1. Compared to patients receiving embedded peritoneal dialysis catheters, patients receiving externalized catheters required more clinic visits, more hours of training, and additional equipment and materials for exit site care and catheter flushes, which increased the cost of catheter care by \$320 prior to admission for placement.

Table 1. Comparison of the Pre-placement Process for Externalized and Embedded Peritoneal Dialysis Catheters

	Peritoneal Dialysis Catheter Procedure	
	Externalized N=5	Embedded N=4
Clinic visits prior to training	2	0
Hours of training prior to admission	2	0
Care of exit site and catheter prior to admission	Sterile dressing X2	0
Catheter flushes prior to admission	1	0
Total dollars associated with catheter care prior to admission	\$320	0

## Discussion

- No infections were observed in either the embedded or the externalized catheter patients. However, instances of inappropriate bathing and dressing/site care practices were identified among patients with externalized peritoneal dialysis catheters:
  - Two patients with externalized catheters indicated that they were taking tub baths and showering soon after the catheter was placed
  - The embedded catheter technique avoids these sources of potential infection, which may provide for greater patient safety and patient satisfaction
- Although patient satisfaction was not measured, anecdotal evidence of increased patient satisfaction with the embedded versus the external catheters was received by clinic staff.

## Conclusions

Improved patient safety was noted as a benefit of embedded peritoneal catheters in this study based on observed care practices. Additional studies are needed to quantify potential benefits of embedded peritoneal catheters with respect to infection rates, patency, site trauma, and health care costs in peritoneal dialysis patients.

## References

- Crabtree JH. Selected best demonstrated practices in peritoneal dialysis access. *Kidney Int Suppl.* 2006(103):S27-37.

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