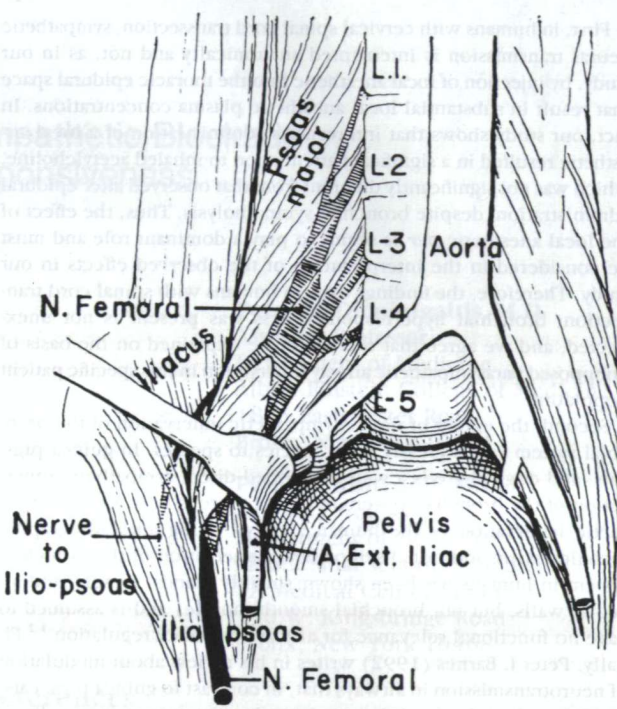


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**In Reply:**—We appreciate Butterworth's interest and the opportunity to describe in more detail our experience with femoral neuropathies associated with surgery performed on patients in a lithotomy position.<sup>1</sup> Unilateral femoral neuropathies developed in all four of the patients. Three of these patients underwent vaginal hysterectomies with or without cystocele or rectocele repairs (table 1). The remaining patient underwent resection of a rectal carcinoma and ileoanal anastomosis while in a low lithotomy (synchronous) position in which both abdominal and rectal incisions are made. In this patient, a self-retaining retractor that exerted bilateral lateral abdominal wall traction *via* a set of 10-cm wide blades placed at the level of the umbilicus was used. A separate, hand-held retractor with a 7-cm-wide blade was used at the suprapubic end of the abdominal incision to lift the rectus abdominis muscle and bladder toward the symphysis pubis.

Abdominal wall retractors often are reported to be associated with perioperative femoral neuropathies, although many other factors also may be implicated. When related to retractors, the assumption is that retractors place continuous pressure on the iliopsoas muscle and either stretch the nerve or cause it to become ischemic by occluding the external iliac artery or penetrating vessels of the nerve as it passes through the muscle (fig. 1). Rosenblum *et al.*<sup>2</sup> have speculated that self-retaining retractors that exert continuous pressure are more likely to produce a femoral neuropathy than hand-held retractors, which usually exert pressure intermittently. Although a self-retaining abdominal wall retractor was used in one of our patients, its placement at the umbilical level (not in the pelvis) and use on only the abdominal wall muscles and peritoneum makes it an unlikely contributor to the femoral neuropathy. A bladder retractor could affect the femoral nerve, especially if turned laterally, but the use of hand-held pressure also makes it unlikely to have contributed to the neuropathy. Vaginal retractors in nonparturients<sup>2</sup> and forceps in parturients<sup>3</sup> also have



**Fig. 1.** Relationship of iliopsoas muscle, iliac muscle, femoral nerve, and external iliac artery within the pelvis. Note the probable location of a displacing and compressing retractor blade that would be used for an abdominal surgical approach to the pelvis. Note the formation of the femoral nerve from the lumbar plexus and its course in the iliopsoas muscle. Because the origin of the nerve branch to the iliopsoas muscle is proximal to the location of the retractor blade, an injury caused by this mechanism would not affect the function of the iliopsoas muscle. In contrast, any injury mechanism that would involve the lumbosacral nerve plexus likely would affect the function of this muscle. (Reprinted with permission.<sup>2</sup>)

**Table 1. Characteristics of Patients with Femoral Neuropathy\***

Patient No.	Age (yr)	Gender	BMI	Smoking Status	Duration in Lithotomy (h)	Procedure	Outcome (yr)	
							1	5
1	37	F	19.5	Current smoker	1.2	Vaginal hysterectomy	Regained motor and sensory function	—
2	72	F	28.1	Never smoked	1.3	Vaginal hysterectomy, cystocele, and rectocele repairs	Unilateral quadriceps weakness requiring use of a walker	Mild quadriceps weakness; no walker needed
3	62	F	18.9	Current smoker	0.9	Vaginal hysterectomy	Regained motor and sensory function	—
4	53	M	29.5	Current smoker	4.9	Resection of rectal carcinoma and ileoanal anastomosis	Unilateral quadriceps weakness requiring use of a cane	Unilateral quadriceps weakness, no cane needed; experienced difficulty climbing stairs

\* Femoral motor deficit of at least 3 months' duration.  
BMI = body mass index (kg · m<sup>-2</sup>).



been implicated in femoral neuropathies, but their role in the development of neuropathies in our patients is unknown.

There may be factors other than retractors associated with perioperative femoral neuropathies.<sup>4</sup> As we have shown, a variety of patient factors, such as very thin body habitus and smoking in the preoperative period, may be associated with lower extremity neuropathies.<sup>1</sup> Three of these four patients had one or more of these factors. Two of the women undergoing vaginal hysterectomy had body mass indexes 20 kg/m<sup>2</sup> or less and were smokers. The man undergoing resection of a rectal carcinoma was in the low lithotomy position for approximately 5 h and was a smoker. Extremes of either hip flexion or extension also may be associated with femoral neuropathies.<sup>5,6</sup> Hemorrhage in the iliopsoas muscle and subsequent compression or ischemia of the femoral nerve also have been reported to occur during the perioperative period.<sup>7</sup>

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## Fiberoptic Bronchoscopy in a Patient Requiring Continuous Positive Airway Pressure

**To the Editor:**—Diagnostic and therapeutic fiberoptic bronchoscopy under topical anesthesia in a patient whose lungs require ventilation using continuous positive airway pressure (CPAP) but in whom the trachea is not intubated, is not easily performed because of difficulties in ensuring an airtight breathing system equipped with oxygen and a PEEP/CPAP valve. Failure to administer CPAP even for a short period may lead to severe hypoxemia. When a Patil-Syracuse mask is not available and positive pressure ventilation and/or oral fiberoptic intubation are necessary, the simple system described by Higgins and Marco<sup>1</sup> can be used.

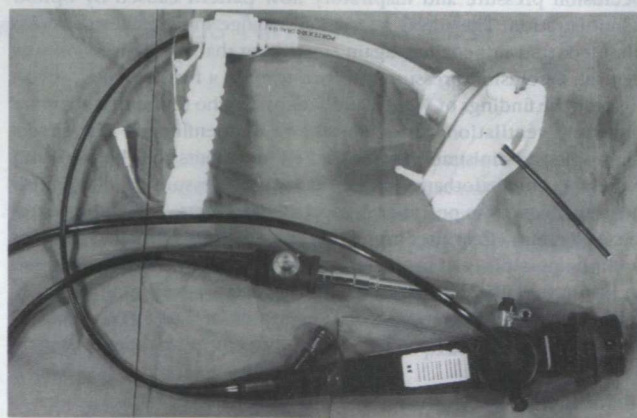
We adopted their method to enable the application of CPAP during fiberoptic bronchoscopy. A large endotracheal tube (ETT), size 9 or 10, is cut short, the tube's cuff is inflated within the connector orifice of a face mask to form a seal (fig. 1), and the ETT is attached to an anesthetic machine equipped within a PEEP valve.

The fiberoptic bronchoscope is inserted through a fiberoptic bronchoscope swivel connector (Portex, United Kingdom) into the ETT and, from there, into the patient's nose or mouth. The face mask is kept tightly applied to the face, while the patient receives continuous oxygen and the desired PEEP.

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**Fig. 1.** A fiberoptic bronchoscope is passed through an endotracheal tube, which is fixed into a face mask by inflating the cuff, permitting administration of continuous positive airway pressure in a spontaneously breathing patient.