Fluoroscopy-guided Cephalic Angled Approach to the Spinal Canal for Myelography

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The traditional technique of lumbar puncture in myelography may have a relatively low success rate and uses much more time in difficult cases. A more reliable and easier technique, a fluoroscopy-guided cephalic angled approach, has been developed for difficult cases.

**Key words:** Spinal puncture, myelography

Magnetic resonance (MR) imaging is the favored examination for evaluation of spinal problems. However, this examination is contraindicated in some patients such as morbidly obese patients or patient with pace-makers or internal metallic fixation on the spine. Myelography is the choice for these patients.[1]

Traditionally, the puncture for myelography has been made in the midline, usually at the L2-3 level, with patients in a prone or shallow oblique position.[1] However, the interlaminar foramen is too small to approach in some patients. Therefore, we developed a more reliable and easier technique for lumbar puncture.

**SUBJECTS AND METHODS**

From December, 1999 to September, 2000, 66 subjects with spinal neuropathy joined this study. Fluoroscopy machines with angled gantry and tilted table (Toshiba KXO-80N DBA-300A, Tokyo, Japan) were used for myelography. Before puncture, patients were placed in the prone position and the tube gantry was tilted to a cephalic direction to parallel the spinous process (Fig. 1). The tilted angle, dependent to the spinous process, was about 10-30 degrees in our cases. This procedure can be performed fluoroscopically. The tilt of tube gantry makes the interlaminar foramen larger and easier to identify because the overlapping of the spinous process shadow is reduced to minimum (Fig. 2-a,b). A 22-gauge, 86 mm spinal needle was passed to a depth of about 1cm in a direction parallel to the foram. The needle was checked fluoroscopically to determine whether the needle shadow became a point in the interlaminar foramen (Fig. 3). Then, the needle could be easily pushed into the thecal sac. Entry into the thecal sac was documented either fluoroscopically or by obtaining cerebrospinal fluid after the inner stylet was removed. In a few patients with a very small interlaminar foramen, the technique was performed in a shallow oblique prone position. Almost all myelographic procedures in our cases (97%, 64/66) were performed successfully with a single puncture and the procedure and fluoroscopic times were reduced.

**DISCUSSION**

The traditional puncture technique in myelography may have a relatively low success rate and use much more time in difficult cases in which there are calcified interspinous ligaments or small interlaminar forams.[1] A modified approach in a shallow oblique prone position or coaxial...
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Figure 2. A 48-year-old man with sciatica. 

2a Small interlaminar foramen is noted in true PA view of the lumbar spine with non-angled gantry. 

2b Modified PA view of the lumbar spine with cephalic angled gantry makes the interlaminar foramen larger.

Figure 3. The needle is checked fluoroscopically to make sure that the needle shadow becomes a point in the interlaminar foramen.

REFERENCES

在透視下以頭向傾斜方式進行腰椎穿刺來完成脊髓攝影

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利用傳統的腰椎穿刺方式來處理某些困難的個案時，成功率通常較低，也常耗費較多的時間。我們利用透視下以頭向傾斜方式來進行腰椎穿刺，這對困難的個案是一個更可靠也更簡單的方式。

關鍵詞：脊椎穿刺，脊髓攝影