CLO technique (N)

lateral oblique fluoroscopic views for proper needle placement in the interlaminar cervical epidural injection

Gaurav Jain M.D.1, Eric R. Helm M.D.1, Srdjan S. Nedeljkovic M.D.2, Ajay Wasan M.D.1,2, Haibin Wang M.D. Ph.D.1

1 Division of Pain Medicine, Department of Anesthesiology, University of Pittsburgh Medical Center, Pittsburgh, PA
2 Department of Anesthesiology and Pain Medicine, Harvard Medical School and Brigham and Women’s Hospital, Boston, MA

Introduction
For cervical epidural steroid injections, fluoroscopic guidance technique typically involve a trajectory view for initial needle placement followed by multi-planar imaging to confirm accurate needle tip placement. The lateral view is often considered the ‘safety’ view as this best visualizes the needle tip proximity to the dorsal spinal canal and visualize the spinolaminar line to avoid dural penetration. However, often during interlaminar cervical epidural steroid injection (ICESI) anatomic visualization is compromised in the lateral view.

The utility of another radiographic view, the contralateral oblique (CLO) is identified when performing ICESI. CLO is a useful alternative with some advantages to the traditional lateral “safety” view for improved anatomy identification and needle depth assessment during ICESI. For trainees in a pain medicine fellowship, learning to perform the ICESI can be a stressful experience. The inability to clearly visualize important anatomical landmarks and assess the needle depth makes trainees uncomfortable while performing ICESI. Trainees’ learning curves for ICESI may be slow and many may not be confident to perform it independently. We explored pain medicine fellows’ attitudes and perceptions about the use and learning of two different “safety” fluoroscopic views while performing ICESI in two accredited programs.

Methods
Through an online survey with 15 questions and mostly Likert-type responses, the current pain medicine fellows at the University of Pittsburgh Medical Center and Brigham’s and Women Hospital were surveyed. At both our study centers, there are opportunities to learn and perform ICESI utilizing both antero-posterior/ lateral (APL) and contralateral oblique (CLO) techniques.

Only fellows who had an opportunity to perform ICESI with the use of both techniques were included (n=16/20 fellows). The descriptive analysis was performed and frequencies and central tendencies of responses were calculated.

Results
- 81.3% fellows rated the ease of learning ICESI with APL approach as very easy to somewhat easy. While 100% fellows thought that CLO was very easy to somewhat easy to learn.
- 81.3% fellows responded that CLO technique offered better visualization of contrast dye spread pattern to confirm epidural space and 100% thought that the ICESI complication rates were lower with utilizing CLO views.
- Almost equal number of fellows were likely (56.3%) and unlikely to APL technique for ICESI as an independent pain physician while 100% were likely (75% very likely) to use CLO technique.
- Fellows predominantly (81.3%) responded to favor use of CLO technique over APL for ICESI as an independent physician.
- Technique for performing ICESI in following patient:

<table>
<thead>
<tr>
<th>Patient type</th>
<th>APL technique (N)</th>
<th>CLO technique (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal/ average built</td>
<td>6 (37.5%)</td>
<td>10 (62.5%)</td>
</tr>
<tr>
<td>Obese</td>
<td>2 (12.5%)</td>
<td>14 (87.5%)</td>
</tr>
<tr>
<td>Short neck</td>
<td>1 (6.3%)</td>
<td>15 (93.8%)</td>
</tr>
<tr>
<td>Post-laminectomy</td>
<td>6 (37.5%)</td>
<td>10 (62.5%)</td>
</tr>
</tbody>
</table>

- Finally, 68.8% fellows were somewhat uncomfortable (43.8%) to very uncomfortable to ask their attending physician to use the CLO approach if (s)he predominantly or exclusively used the APL approach.

Discussion
- Most fellows thought that CLO technique was easy to learn and very likely to utilize CLO views as an independent pain physician.
- Slightly surprising that most fellows were uncomfortable to some degree to ask their attending to try CLO technique.
- Although the study was conducted at two of the big pain medicine programs in the U.S. with an excellent response rate, it may still not be a representative of larger pain fellow group due to small number of participants.
- Moreover, CLO technique may not be used in many institutions which would lead to a different outcome.
- In conclusion, our study suggests that CLO safety view is perceived to be safer than lateral view and is still easy to learn. We encourage increase in the use of CLO technique in fellow education for ICESI.

Geometry of CLO safety view

AP, Pre and Post Contrast CLO Images

References
- Authors had nothing to disclose.
- For any comments or questions please contact: Gaurav Jain at jaing@upmc.edu