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**A3031**

October 21, 2019  
 10/21/2019 9:30:00 AM - 10/21/2019 11:30:00 AM  
 Room WA2 - Area A

International Multicenter Study of Accidental Dural Puncture Rate; Comparison of the Compuflo with Traditional Method

Rovnat Babazade, M.D., Yu-Li Lin, B.S., Guillermo Hidalgo Vallés, M.D., Giorgio Capogna, M.D., Massimo Micaglio, M.D., Rakesh Vadhera, M.D., F.R.C.A, Ralf Gebhard, M.D.  
 The University of Texas Medical Branch, Galveston, Texas , United States

**Disclosures:** **R. Babazade:** None **Y. Lin:** None **G. Hidalgo Vallés:** None **G. Capogna:** None **M. Micaglio:** None **R. Vadhera:** None **R. Gebhard:** Honoraria; Self; R. E. Gebhard received honoraria as a member of the Scientific Advisory Board for Milestone Scientific..

**Introduction:** Accidental dural puncture (ADP) is a complication of epidural anesthesia with reported rates of 0.5-4%<sup>1</sup>. A loss-of-resistance (LOR) technique, tactile feedback from the needle and surface landmarks are traditionally used in labor epidural analgesia to guide the epidural needle into the epidural space<sup>2</sup>. The use of continuous real-time pressure sensing technology (Compuflo) has been recently validated as a tool to identify the epidural space and is gaining popularity as an alternative to traditional approach<sup>2</sup>. To date, there is only one published single center study comparing the ADP rate of these techniques<sup>2</sup>. Therefore, the aim of this study was to determine accidental dural puncture rate and its complications comparing the use of continuous real-time pressure sensing technology and traditional LOR technique in parturients under labor epidural analgesia. **Methods:** We collected records of epidural administration on labor and delivery patients using the Compuflo technology from four institutions between 2015 and 2019: 1 from the USA, 1 from Chile and 2 from Italy. The data from the USA site is a randomized controlled noninferiority trial comparing the traditional and Compuflo method in identifying the epidural space<sup>2</sup>. For each site, we examined the parturient characteristics, including age, BMI, parity, and delivery method (Table 1). We also investigated the composition of epidural performers (anesthesiologist, fellow, resident, or nurse anesthesiologist) on each site. The study outcome was any complication after the epidural placement, including accidental dural puncture, postdural puncture headache (PDPH), and epidural blood patch. **Results:** Among the four sites, there were 812 parturients who received epidural analgesia with Compuflo and none of them had accidental dural puncture regardless of the composition of the epidural performer types (Table 1). However, ADP rate in the traditional LOR group from the non-inferiority trial was 5% where the performer composition was more heterogeneous<sup>2</sup> (site 1). Among 812 parturient in the Compuflo group, no PDPH or other complications observed. One parturient among 78 parturient in the traditional LOR group from the non-inferiority trial had a PDPH. **Conclusion:** This is the first international multicenter study in the literature to compare the incidence of accidental dural puncture of Compuflo with continuous LOR technique in parturients under labor epidural analgesia. Epidural analgesia with Compuflo found to be safe and none of them had ADP regardless of the composition of the epidural performer types. Further studies should aim to determine the cost-effectiveness of this continuous real-time pressure sensing technology.

**Reference1.** Russell S. Management strategies for unintentional dural puncture: a Canadian experience survey in an academic setting. *Can J Anaesth.* 2018;2. Gebhard RE. Objective epidural space identification using continuous real-time pressure sensing technology: a randomized controlled comparison with fluoroscopy and traditional loss of resistance. *Anesthesia & Analgesia.* 2018; graphic\_{06F4E645-ECA0-4EAA-9231-3DC73E89D31F}\$

Figure 1

Table 1. Labor and delivery patient characteristics and adverse events after epidural procedure, by research site and Compuflo use

Patient Characteristic	Site 1		Site 2	Site 3	Site 4
	Compuflo (N= 70)	Traditional (N= 78)	Compuflo (N= 488)	Compuflo (N= 155)	Compuflo (N=99)
	Mean ± STD				
Age	32.0 ± 5.3	30.9 ± 5.4	35.0 ± 7.2	26.2 ± 4.5	31.1 ± 5.4
BMI	30.0 ± 5.1	30.7 ± 5.7	28.8 ± 4.2	27.3 ± 3.4	29.0 ± 3.8
	N (%)				
Epidural performer type					
Anesthesiologist	11 (15.7)	8 (10.3)	488 (100)	155 (100)	86 (86.9)
Fellow	47 (67.1)	49 (62.8)			13 (13.1)
Resident	12 (17.1)	19 (24.4)			
Nurse anesthesiologist	0 (0)	2 (2.6)			
Delivery method					
C section	N/A	N/A	427 (87.5)	46 (29.7)	24 (24.2)
Vaginal			61 (12.5)	109 (70.3)	75 (75.8)
Parity					
Nullipara	N/A	N/A	N/A	105 (67.7)	78 (78.8)
Multipara				50 (32.3)	21 (21.2)
Accidental dural puncture	0 (0)	4 (5.1)	0 (0)	0 (0)	0 (0)
Postdural puncture headache	0 (0)	1 (1.3)	0 (0)	0 (0)	0 (0)
Epidural blood patch	0 (0)	N/A	0 (0)	0 (0)	0 (0)

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