



# Erratum to virtual or reality: divergence between preprocedural computed tomography scans and lung anatomy during guided bronchoscopy

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In the original article appeared on Page: 1595-1611, Vol 12, No 4 (April 2020) Issue of the *Journal of Thoracic Disease (JTD)* (1), three errors occurred in *Table 2*.

The details are as followings:

- ❖ *Table 2*, 1st column, 8th row: “Lung Suite...”, needs to be corrected as “Cone-Beam Computed Tomography (Lung Suite, syngo DynaCT and Toolbox)”;
- ❖ *Table 2*, 2nd column, 8th row: “Philips, Best...”, should be changed to “Philips (Best, The Netherlands), Siemens Healthcare (Forchheim, Germany)”;
- ❖ *Table 2*, 4th column, 8th row: at the end of the list of references (“Hohenforst-Schmidt *et al.*,...”), “and others” needs to add.

The correct *Table 2* is given below (*Table 2*).

**Table 2** Guided bronchoscopy platforms

Product	Manufacturer	Technology	Peer-reviewed journal publications
superDimension™ navigation system (version 7.1 and below)	Medtronic	Electromagnetic tracking with a steerable locatable guide and working channel	Over 100 original research articles to date representing data from over 75 clinical studies (2,8)
superDimension™ navigation system version 7.2 with fluoroscopic navigation technology	Medtronic	Tomosynthesis-based fluoroscopic navigation: digital tomosynthesis reconstruction of multiple fluoroscopic images. A local registration feature uses fluoroscopy and a proprietary algorithm to update the relationship between the target and the catheter intraprocedurally	Aboudara <i>et al.</i> 2019 (46)
SPiN Thoracic Navigation System™	Veran Medical	Based on an external electromagnetic generator, uses tip-tracked instruments for continuous guidance in a trackable airway map, an inspiration/ expiration computed tomography (CT) scan protocol, and an algorithm to pair inspiratory and expiratory CT scans with the respiratory cycle in order to compensate for respiratory variation (respiratory gating)*	4 clinical studies (3,27,28,47) and 1 case report (48) on guided bronchoscopy with the SPiN Drive system™ for navigated bronchoscopy*. “All-in-One” study currently recruiting (30)
LungPoint™ virtual bronchoscopic navigation (VBN) system	Broncus Medical	Image-based synchronization technique (partly manual). No registration of integrated tracking method	Eberhardt <i>et al.</i> 2010 (12), Tamiya 2013 (13), and Sterman <i>et al.</i> 2015 (49)
Bf-Navi	Olympus, Tokyo, Japan	Virtual bronchoscopy. No integrated tracking method	Oki <i>et al.</i> 2019 (50), Ali <i>et al.</i> 2019 (51)
Archimedes™ VBN system	Broncus Medical	Registration is conducted using infrared cameras and radiopaque markers to create augmented fluoroscopic views (“fused fluoroscopy”) during bronchoscopic transparenchymal nodule access	Herth <i>et al.</i> 2015 (6) and Harzheim <i>et al.</i> 2016 (52)
LungVision™	BodyVision Medical	Uses augmented fluoroscopy: Artificial intelligence with standard c-arm and dynamic registration tracking to fuse preprocedural CT scans with intraprocedural fluoroscopy	No peer-reviewed journal publications to date. Several abstract reports (14-17)
Cone-Beam Computed Tomography (Lung Suite, syngo DynaCT and Toolbox)	Philips (Best, The Netherlands), Siemens Healthcare (Forchheim, Germany)	Overlays three-dimensional CBCT data on live fluoroscopy (augmented fluoroscopy) with automatic positional adaptation	Hohenforst-Schmidt <i>et al.</i> 2014 (53), Pritchett <i>et al.</i> 2018 (37), Ali <i>et al.</i> 2019 (51), Sobieszczyk <i>et al.</i> 2018 (54), Bowling <i>et al.</i> 2017 (55), and others
Ion™ endoluminal robotic system	Intuitive Surgical	Uses direct continuous visualization and fiber-optic, real-time shape-sensing technology	Fielding <i>et al.</i> , 2019 (5)
Monarch™ Platform	Auris Surgical Robotics	Electromagnetic-based. Uses “fused navigation” of multiple data modalities (electromagnetic navigation, direct visualization, real-time optical pattern recognition, machine learning) to integrate the preprocedural CT into an intraprocedural interface	REACH study (56), Rojas-Solano <i>et al.</i> 2018 (4), two abstract reports (10,11)

\*The SPiN Thoracic Navigation System™ also includes SPiN Perc™, a system of navigated transthoracic needle aspiration (27,57-59) which is outside the scope of this review article yet still subject to CT-to-body divergence.

The authors regret the error.

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## References

1. Pritchett MA, Bhadra K, Calcutt M, et al. Virtual or reality: divergence between preprocedural computed tomography scans and lung anatomy during guided bronchoscopy. *J Thorac Dis* 2020;12:1595-611.

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