

UCSF

UC San Francisco Previously Published Works

Title

Central Venous Catheter in the Internal Mammary Vein

Permalink

<https://escholarship.org/uc/item/62n6b249>

Journal

Anesthesiology, Publish Ahead of Print(&NA;)

ISSN

0003-3022

Authors

House, L McLean
Yen, Albert
Bokoch, Michael P

Publication Date

2019-08-01

DOI

10.1097/aln.0000000000002702

Peer reviewed

Anesthesiology
Central venous catheter in the internal mammary vein
--Manuscript Draft--

| | |
|--|--|
| Manuscript Number: | ALN-D-19-00097R1 |
| Full Title: | Central venous catheter in the internal mammary vein |
| Article Type: | Images in Anesthesiology |
| Corresponding Author: | L. McLean House II, M.D. University of California, San Francisco San Francisco, CA UNITED STATES |
| Corresponding Author Secondary Information: | |
| Corresponding Author's Institution: | University of California, San Francisco |
| Corresponding Author's Secondary Institution: | |
| First Author: | L. McLean House II, M.D. |
| First Author Secondary Information: | |
| Order of Authors: | L. McLean House II, M.D. Albert Yen, M.D. Michael P Bokoch, M.D., Ph.D. |
| Order of Authors Secondary Information: | |

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
34
35
36
37
38
39
40
41
42
43
44
45
46
47
48
49
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65

TITLE: Central venous catheter in the internal mammary vein

AUTHORS:

L. McLean House II, M.D., Anesthesia & Perioperative Care, University of California, San Francisco
Albert Yen, M.D., Anesthesia & Perioperative Care, University of California, San Francisco
Michael P. Bokoch, M.D., Ph.D., Anesthesia & Perioperative Care, University of California, San Francisco

CORRESPONDING AUTHOR:

L. McLean House II, M.D.
UCSF Department of Anesthesia and Perioperative Care
513 Parnassus Ave, Room S-455
San Francisco, CA 94143
Tel: 415-476-8387

PRIOR PRESENTATIONS: Not applicable

ACKNOWLEDGEMENTS: none

WORD COUNT: 250

FUNDING: Not applicable

CONFLICTS OF INTEREST: The authors declare no competing interests.

AUTHOR CONTRIBUTIONS: LMH composed the report, prepared the images, and cared for the patient. AY performed a literature review and cared for the patient. MPB oversaw the case report, chose the images, and cared for the patient.

1
2
3
4 **Authors:** Drs. House, Yen, and Bokoch

5
6
7 **Institution:** University of California, San Francisco

8
9 **Image Text:**

10
11
12 Left-sided central venous catheterization has several pitfalls. Malposition may occur despite
13 proper insertion technique. Pictured here, a multi-lumen access catheter (sheath) with triple-
14 lumen insert was placed by Seldinger technique after left internal jugular vein puncture. While
15 initially freely mobile, the J-tip guidewire encountered resistance at 20 cm depth. The catheter
16 advanced smoothly over the guidewire after dilation. Once secured, two distal ports would not
17 aspirate; the remaining ports aspirated blood. A central venous waveform was transduced from
18 the functioning ports, which were infused without complication. Chest radiography (Panel A)
19 reveals the sheath position (arrowheads) with catheter tip (blue arrow) below the clavicle,
20 concerning for **abnormal intravascular versus** intrapleural placement. **Sternotomy wires,**
21 **prosthetic valves, left pleural effusion, and an aortic stent graft are also visualized.** Computed
22 tomography angiography demonstrates cannulation of the left internal mammary vein (LIMV)
23 without vessel injury (Panels B, axial and C, sagittal). The catheter runs alongside the left
24 internal mammary artery (red arrows).
25
26
27
28
29

30 Anomalous vessel cannulation from left-sided supracaval approach occurs more frequently than
31 right-sided. The left innominate vein returns at an oblique angle to the superior vena cava (SVC)
32 and has tributary vessels (e.g., LIMV) which catheters may cannulate.^{1,2} Risk factors include
33 persistent left SVC, prior vascular surgery, tumors, and anomalous venous drainage.¹
34 Resistance to guidewire advancement or inability to aspirate blood from distal ports may
35 indicate anomalous cannulation. High central venous pressure transduction and greater than
36 four insertion attempts portend malposition.³ **Partially withdrawing the sheath and rewiring under**
37 **fluoroscopic guidance may offer a salvage technique.**
38
39
40

41 **References**

- 42
43 1. Roldan C, Paniagua L: Central Venous Catheter Intravascular Malpositioning: Causes,
44 Prevention, Diagnosis, and Correction. West J Emerg Med 2015; 16: 658-64
45 2. Lim J, Jee C, Kwak K: The malposition of a central venous catheter through a sheath
46 introducer via the left internal jugular vein: A case report. Medicine (Baltimore) 2017; 96: e7187
47 3. Schummer W, Schummer C, Rose N, Niesen W, Sakka S: Mechanical complications
48 and malpositions of central venous cannulations by experienced operators: A prospective study
49 of 1794 catheterizations in critically ill patients. Intensive Care Med 2007; 33: 1055-9
50
51
52
53
54
55
56
57
58
59
60
61
62
63
64
65

