VEITH SYMPOSIUM
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51st

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Minimal Invasive Transaxillary First Rib Resection Under Local And Regional Anesthesia For TOSs: How To Do It, Limitations And Precautions

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Disclosure

No conflict of interest related to this presentation

Minimal Invasive Transaxillary First Rib Resection To Treat TOS
A consolidated technique

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ORIGINAL ARTICLE
MISCELLANEOUS

Thirty-year experience of transaxillary resection of first rib for thoracic outlet syndrome

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Results in 103 Pts
100% Technical success
No need for additional or secondary approach

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Supine position with the **arm wrapped up** in a sterile drape and **sustained by an assistant**

A small (3-5 cm) skin incision at the base of the hairline between the posterior border of the pectoralis major muscle and the anterior border of the latissimus dorsi at the level of the third rib

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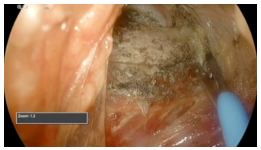

General Anesthesia – postoperative pain management

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Effective even in case of 7th Cervical Rib or pathologically fused ribs

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Minimal Invasive Transaxillary First Rib Resection To Treat TOS
Innovation of technique - Loco-Regional Anesthesia

> J Cardiothorac Vasc Anesth. 2021 Jul;35(7):2234-2236. doi: 10.1053/j.jvca.2020.11.024. Epub 2020 Nov 19.

PECS II Block Combined with Supraclavicular Brachial Plexus Block Allows Anesthesia for Transaxillary Thoracic Outlet Syndrome Decompression Surgery

Fabio Costa [1], Alessandro Strumia [1], Giuseppe Pascarella [1], Eleonora Tomaselli [1], Monica Palminteri [1], Vincenzo Antinolfi [1], Nunzio Montelione [2], Francesco Stilo [2], Francesco Spinelli [2], Felice Eugenio Agrò [1]

Affiliations + expand

PMID: 33309498 DOI: 10.1053/j.jvca.2020.11.024

Since Junuary 2021 shift to loco-regional anesthesia - Reported in July 2021

Minimal Invasive Transaxillary First Rib Resection To Treat TOS
Innovation of technique - Loco-Regional Anesthesia

Since Junuary 2021 shift to loco-regional anesthesia

Supraclavicular Brachial Block M-SBP Block
10 mL of 2% mepivacaine, reaching the brachial plexus and the first rib periosteum

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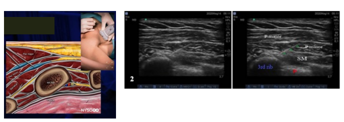
Innovation of technique - Loco-Regional Anesthesia



Since Junuary 2021 shift to loco-regional anesthesia

The Pectoralis nerve and serratus plane nerve blocks II (PECS II)
15 mL of 7,5% ropivacaine between the pectoralis minor muscle and the serratus anterior muscle

Minimal Invasive Transaxillary First Rib Resection To Treat TOS
Innovation of technique - Loco-Regional Anesthesia

Retrospective study - We compared two groups

The "GA" group underwent the intervention under general anaesthesia without regional blocks for analgesia

The "RA" group underwent the intervention with the combination of SBP bloock and the PECS II block, in spontaneous breathing, with deep sedation

Minimal Invasive Transaxillary First Rib Resection Under Local And Regional Anesthesia For TOSs
106 consecutive pts between May 2019 and May 2024

	GA (n=46)	RA (n=60)	P value
Age (yrs)	34.55 ± 9.61	29.92 ± 9.75	0.0539
Sex (M/F)	11/35	26/34	0.0626
BMI (kg/m)	22.49 ± 2.38	28.5 ± 2.05	0.8377
ASA score, n (%)			
I	12 (26.0%)	18 (30.0%)	
II	34 (74.0%)	42 (70.0%)	
Smoke, n (%)	17 (38%)	21 (36%)	0.8634
[illegible]	[illegible]	[illegible]	[illegible]
left	26 (56.6%)	19 (31.7%)	
Supernumerary rib, n (%)	9 (19.5%)	16 (26.6%)	0.9858
Type of TOS, n (%)			
VTOS	13 (28.3%)	22 (36.7%)	
ATOS	2 (4.3%)	7 (11.6%)	
NTOS	21 (45.6%)	14 (23.3%)	
Mixed	10 (21.8%)	17 (28.4%)	

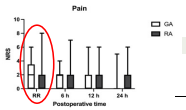
Values are reported as number (percentage) of subjects and mean ± standard deviation (SD).

GA: general anaesthesia; RA: regional anaesthesia; BMI: Body mass Index; VTOS: venous thoracic outlet syndrome; ATOS: arterial thoracic outlet syndrome; NTOS: nervous thoracic outlet syndrome.

No significant difference in demography

Minimal Invasive Transaxillary First Rib Resection Under Local And Regional Anesthesia For TOSs

Pain



No conversion to general anaesthesia

	GA(n=46)	RA(n=60)	P value
Intraoperative fentanyl, mcg	312.07 ± 92.24	96.15 ± 62.18	**<0.0001**
Intraoperative remifentanil, mcg	390.57 ± 390.71	73.13 ± 132.75	**0.0418**
Postoperative morphine, n (%)	25 (55%)	11 (18%)	**0.0013**
Total postoperative morphine, mg	3 (0-20)	0 (0-0)	**0.0002**

Values are reported as number (percentage) of subjects, mean ± standard deviation (SD) and median with interquartile range (IQR).

GA: general anaesthesia; RA: regional anaesthesia;

Minimal Invasive Transaxillary First Rib Resection Under Local And Regional Anesthesia For TOSs

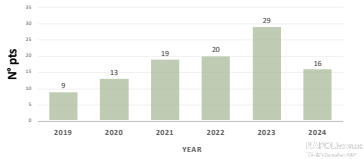
Surgery

	GA(n=46)	RA(n=60)	P value
Surgical time, min	123.27 ± 74.11	78.71 ± 24.86	**0.0008**
Lung injury, n (%)	19 (41%)	0 (0%)	**<0.0001**
LOS in hospital, days	4.48 ± 2.02	3.18 ± 1.41	**0.0026**
PONV, n (%)	14 (30.4%)	6 (10.0%)	**0.0312**
Emothorax, n (%)	1 (2.1%)	2 (3.3%)	**0.8307**

Values are reported as number (percentage) of subjects and mean ± standard deviation (SD). GA: general anaesthesia; RA: regional anaesthesia; LOS: length of stay; PONV: postoperative nausea and vomiting.

Minimal Invasive Transaxillary First Rib Resection Under Local And Regional Anesthesia For TOSs

Patient Satisfaction



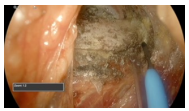
28% Bilateral Resection

Minimal Invasive Transaxillary First Rib Resection Under Local And Regional Anesthesia For TOSs

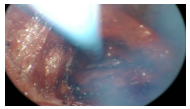
Regional Anesthesia - spontaneous breathing under sedation with Propofol 2% in continuous infusion. During the opening of the pleura, the lung collapsed, facilitating surgical maneuvers, and eventually reducing surgical timing and lung injuries.

Minimal Invasive Transaxillary First Rib Resection Under Local And Regional Anesthesia For TOSs

Results



GA group



RA group

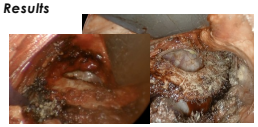
	GA(n=46)	RA(n=60)	P value
Surgical time, min	123.27 ± 74.11	78.71 ± 24.86	**0.0008**

Quicker rib dissection in the RA group

Minimal Invasive Transaxillary First Rib Resection Under Local And Regional Anesthesia For TOSs

Results

GA group



RA group

	GA(n=46)	RA(n=60)	P value
Lung injury, n (%)	19 (41%)	0 (0%)	**<0.0001**

Safer and easier rib dissection in the RA group

CONCLUSIONS

Better pain control due to Regional Block

Quicker, easier, and safer surgical technique

High Patient Satisfaction

Limitations of the study: small study sample, retrospective nature