References

1. Burt BM, Palivela N, Cekmecelioglu D, Paily P, Najafi B, Lee H-S, et al. Safety of first rib resection for thoracic outlet syndrome. *J Thorac Cardiovasc Surg*. 2021; 162:1297-305.e1.
2. Mahmoud O, Sihvo E, Rasanen J, Vikatmaa L, Vikatmaa P, Venermo M. Treatment of Paget-Schroetter syndrome with a three-stage approach including thoracoscopic rib resection at the second stage. *J Vasc Surg Venous Lymphat Disord*. 2018; 6:75-82.
3. Gharagozloo F, Meyer M, Tempesta B, Gruessner S. Robotic transthoracic first-rib resection for Paget-Schroetter syndrome. *Eur J Cardiothorac Surg*. 2019;55:434-9.
4. Gharagozloo F, Meyer M, Tempesta B, Werden S. Robotic first rib resection for thoracic outlet syndrome. *Surg Technol Int*. 2020;36:239-44.

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Commentary: Time to take ownership of the first rib

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Thoracic outlet syndrome (TOS) remains a complex disorder, with patients often seeking multiple opinions before treatment. Bouncing between various surgical and medical specialties, it is an orphan condition without ownership. While many in our specialty are willing to perform a first rib resection, few are enthusiastic about seeking out these patients. Supraclavicular and transaxillary approaches are technically challenging due to poor visualization. Transthoracic video-assisted thoracoscopic surgery is tedious with poor instrumentation, leading to high risk of injury to neurovascular structures in inexperienced hands.^{1,2} As Burt and colleagues³ point out, first rib resection is “associated with the highest number of malpractice claims against cardiothoracic surgeons.” Why in the world would we even consider jumping into this foray? Enter robotics.

Burt and colleagues describe their experience with first rib resection (FRR) over a 5-year period.³ Using a prospectively maintained database, they analyzed 123 FRRs performed on 116 patients from 2015 to 2020. Approaches were split between supraclavicular and robotic. Selection bias for approach is minimal, as they were performed by a

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CENTRAL MESSAGE

TOS is an orphan disease often treated by non-thoracic specialists. Robotics provides unrivaled visualization and outcomes. It is time for our specialty to step up and own this disorder.

single surgeon who made a complete switch from supraclavicular to robotic FRR halfway through the time frame. This was due to the increased use of robotics in other thoracic surgical procedures and the obvious drawbacks of a supraclavicular approach. While Dr Burt is known as one of the most experienced in the country with robotic FRR and is clearly past the learning curve, one cannot argue with these results: minimal blood loss, a length of stay less than 2 days, and significantly less morphine milligram equivalent use. Most importantly, brachial plexus palsy was decreased from 18% to 1%, and total complications were decreased from 29% to 3%. The low rates of complications alone are remarkable enough to make the switch.

If you accurately diagnose the correct form of TOS and perform an adequate operation, then the patient should have improved symptoms and you won't get sued. Simple, right? Easier said than done. As Burt has pointed out previously,⁴ traumatic injury precedes neurogenic TOS in more than one

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half of cases, and many patients may already be litigating. Create a multidisciplinary team. Involve specialists that can rule out other diagnoses. Most importantly, be the leader.

Supraclavicular and transaxillary approaches both have similar shortcomings.⁵ Poor exposure, difficult visualization of an adequate length of first rib, and retraction on major neurovascular bundles are comparable. Since many vascular surgeons are more than happy to take on this cohort of patients, why would thoracic surgeons get involved in a technically challenging operation with high litigation rates? In the past several years, most thoracic surgeons have come to terms with the unrivaled visualization and advances in instrumentation provided by the robot, and FFR is a great way to use this technology.

It's time for thoracic surgeons to take ownership of TOS. With a robotic assisted approach, Burt shows us excellent

visualization and superb outcomes. Heck, our specialty is in the name of the condition! This is a problem for thoracic surgeons.

References

1. Kara HV. Editorial on Totally endoscopic (VATS) first rib resection for thoracic outlet syndrome. *J Thorac Dis.* 2017;9:19-21.
2. George RS, Milton R, Chaudhuri N, Kefaloyannis E, Papagiannopoulos K. Totally endoscopic (VATS) first rib resection for thoracic outlet syndrome. *Ann Thorac Surg.* 2017;103:241-5.
3. Burt BM, Palivela N, Cekmecelioglu D, Paily P, Najafi B, Lee H-S, et al. Safety of robotic first rib resection for thoracic outlet syndrome. *J Thorac Cardiovasc Surg.* 2021;162:1297-305.e1.
4. Burt BM. Thoracic outlet syndrome for thoracic surgeons. *J Thorac Cardiovasc Surg.* 2018;156:1318-23.e11.
5. Sanders RJ, Pearce WH. The treatment of thoracic outlet syndrome: a comparison of different operations. *J Vasc Surg.* 1989;10:626-34.