Postoperative outcomes in thoracic outlet decompression for acute versus chronic venous thoracic outlet syndrome

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ABSTRACT

Objective: Venous thoracic outlet syndrome (VTOS) is a rare disorder that occurs in young athletes and working adults. There are multiple published reports demonstrating excellent outcomes with thoracic outlet (TO) decompression surgery when patients present acutely (within 2 weeks of symptom onset). Our objective was to assess outcomes after decompression surgery in patients with acute, subacute, chronic, and secondary VTOS. Additionally, we sought to identify risk factors for persistence of symptoms following operative decompression.

Methods: A retrospective chart review was performed for all patients who underwent operative decompression for VTOS at the University of Pittsburgh Medical Center from 2013 to 2017. We examined baseline characteristics, comorbidities, presenting symptoms, interventions performed, and postoperative clinical outcomes. Patients were characterized as acute, subacute, or chronic based on onset of symptoms and presentation to our surgeons (acute <2 weeks, subacute 2 weeks to 3 months, and chronic >3 months). Our outcomes of interest were return to baseline functional status as defined by resumption of sports activity or occupation and axillosubclavian vein patency.

Results: A total of 51 operative decompressions were performed in 48 patients for VTOS. There were 23 operations (45%) performed on patients who presented acutely, 7 (14%) in the subacute group, and 21 (41%) surgeries in patients with chronic symptoms. Of these 51 operations, 4 (7.8%) were deemed unsuccessful—two surgeries were in the acute group, one in the subacute, and one in the chronic group. The 30-day morbidity after 51 first rib resections included no pneumothoraces, no lymphatic leaks, two surgical site hematomas with associated hemothorax in one patient, two surgical site infections, and only two unplanned returns to the operating room for hematoma evacuation and superficial wound infection washout. In terms of preoperative vein patency, those who presented acutely were more likely to have an occluded axillosubclavian vein ($P = .029$). The Fisher's exact was 0.540, indicating that the proportion of patients returning to baseline functional status were similar when comparing acute presenters with those who present late. A multivariate Cox proportional hazards model was attempted; however, a small sample size greatly limited the power of the study and prohibited identification of risk factors for surgical failure.

Conclusions: Patients with acute and chronic VTOS resumed their preintervention sports activity or vocation after TO decompression in more than 90% of cases with a low incidence of adverse events. Based on our study results, patients with chronic VTOS benefit as much from TO decompression as those with acute VTOS. (J Vasc Surg: Venous and Lym Dis 2021;9:321-8.)

Keywords: Chronic venous thoracic outlet syndrome

Venous thoracic outlet syndrome (VTOS) is relatively rare condition affecting athletes and laborers due to repetitive trauma of the subclavian vein at the thoracic inlet. Its incidence is estimated to be 1 to 2 patients per 100,000 population per year.[1,2] Its rarity contributes to a delay in diagnosis and referral to vascular specialists. Annually, an estimated 3000 to 6000 surgical cases are performed in the United States.[2] The number of surgeries is predicted to increase in the United States following the trend to early specialization and single sport participation by young athletes observed by the American Medical Society for Sports Medicine.[3,4]

VTOS is a form of thoracic outlet syndrome (TOS) distinct from neurogenic and arterial TOS by its anatomic location, pathophysiology, clinical presentation, and treatment.[5,6] VTOS constitutes approximately 5% of patients with TOS but 40% of the surgical volume for TOS. It is categorized based on presentation. Patients may present acutely with spontaneous axillosubclavian vein occlusion. This entity being referred to as effort thrombosis or Paget-Schroetter syndrome is the most common presentation of VTOS.[7-10] Patients may also

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present with a functional or positional obstruction of the axillosubclavian vein. Patients presenting late generally fall in the last three categories of partial obstruction, chronic obstruction, and secondary VTOS.

It was not until the mid 1980s that a comprehensive approach to VTOS was instituted and later reported in the *Archives of Surgery* in 1989 by Kunkel and Machleder.[11] The Society For Vascular Surgery published standards for TOS in 2016, the goal of which was to promote consistency in terminology, diagnosis, description of treatment, and outcome reporting. In the report, acute VTOS was defined as presenting during the first 14 days of symptoms, subacute as 14 days to 3 months, and chronic as 3 months or more.[12]

There have been no randomized controlled trials regarding optimal treatment for VTOS. Despite this lack, the standard of care consists of contrast venography for diagnostic verification and concomitant catheter-directed or pharmacochemical thrombolysis.[13] Thoracic outlet (TO) decompression via first rib resection in effort thrombosis is nearly universally accepted in the vascular community but timing and approach varies. For patients presenting with subacute and chronic VTOS, surgical outcomes after TO decompression surgery are underreported and considered inferior to acute presenters. However, the Hopkins group has reported excellent outcomes in chronic VTOS with a relatively large experience.[14]

Our institution serves as a major referral center for Western and Central Pennsylvania, Eastern Ohio, and West Virginia for TOS. We often are referred patients with VTOS several weeks to months from the outset of symptoms. These patients are often referred to us after undergoing catheter-directed thrombolysis of the axillosubclavian vein at an outside institution. The purpose of this study was to retrospectively evaluate our outcomes in terms of return to work or athletic activity for those patients who presented acutely vs those presenting with subacute and chronic VTOS during the same study period. We also attempted to determine risk factors for treatment failure.

ARTICLE HIGHLIGHTS

- **Type of Research:** Single-center, retrospective review of a prospectively maintained department database
- **Key Findings:** Fifty-one thoracic outlet decompression surgery in 48 patients for venous thoracic outlet syndrome (VTOS) was associated with similar excellent functional outcomes for patients presenting with acute and chronic VTOS.
- **Take Home Message:** Patients with acute and chronic VTOS returned to their preintervention functional baseline in more than 90% of cases. Patients with chronic VTOS benefit as much from thoracic outlet decompression as those with acute VTOS.

METHODS

A retrospective review was conducted on patients who underwent first rib resection for VTOS from 2013 to 2017. Each rib resection was analyzed as its own entity even if a patient received bilateral first rib resections. Data were elicited from a prospective maintained database of two surgeons (M.E., M.S.) who performed TOS surgery at our institution during this time period. Preoperative clinic charts in the electronic medical record were audited for age, sex, race, thrombophilia, tobacco use, renal disease, dominant arm involvement, time to presentation to our surgeons, antecedent upper extremity trauma or inciting factors, athletic performance or occupation involving repetitive overhead movement, and preoperative vein patency. In addition, the use of thrombolysis, balloon venoplasty, and stenting was recorded. The study received approval with waiver of patient informed consent by the University of Pittsburgh Institutional Review Board.

The TO decompression surgery was performed via an infraclavicular approach in more than 95% of cases. All TO decompression operations performed included a subclavius muscle resection, circumferential venolysis of the subclavian vein, first rib resection, and detachment of the anterior scalene muscle from the first rib. Venography with balloon angioplasty or venous reconstruction were used at the discretion of the surgeon. Two patients underwent open reconstruction with patch venoplasty. One patient had jugular vein turndown, and one patient had open venoplasty with endophlebectomy and primary closure.

Follow-up clinic visits were evaluated for symptom resolution and vein patency. Return to previous sports activity or resumption of previous occupation with minimal or no symptoms was defined as a successful outcome. Postoperative anticoagulation was at the discretion of the operative surgeon. Routinely, patients were placed on intravenous heparin in the postoperative period. Before discharge, patients with intraluminal thrombus, significant subclavian vein scarring, or underwent a subclavian vein intervention were transitioned to low molecular weight heparin or a direct oral anticoagulant for 6 to 12 weeks. The duration of therapy was dictated by the postprocedure duplex scan, performed at 4 to 6 weeks. After completing the course of anticoagulation, patients were placed on 81 mg aspirin daily for 12 months. Patients without thrombus, significant intraluminal scarring, and who did not undergo subclavian vein intervention were placed on 81 mg aspirin only. The review period terminated in 2017 to ensure an adequate follow-up period.

Statistical analysis. Continuous variable data were presented as mean ± standard deviation, and categorical data were summarized using frequency and percentage. The Student *t*-test was used to compare normally distributed continuous variables between groups, and the χ^2 or Fisher exact test was used as appropriate to compare categorical variables between groups.

Univariable and multivariable analyses were performed using logistic regression to determine clinical and demographic factors associated with failure to achieve return to baseline functional status in the long term. Because some patients never achieved baseline functional status and other patients achieved postoperative symptom resolution but eventually exhibited treatment failure, this analysis was not susceptible to Kaplan-Meier analysis. Backward stepwise selection and Akaike information criterion were applied in building different multivariable logistic regression models.

Patency variables were studied by survival analysis to account for variation in long-term follow-up. For loss of primary patency, primary-assisted patency, and secondary patency, Kaplan-Meier estimates were generated, and survival functions were depicted graphically. For each end point, differences between acuity of presentation and operative stent use were assessed, with these univariable comparisons being tested by the log-rank test.

All statistical tests were two-tailed, and *P* values of less than .05 were considered statistically significant. Data was stored in Excel (Microsoft, Redmond, WA), and statistical analyses were performed using STATA, version 15 (Stata Corporation, College Station, Tex).

RESULTS

A total of 51 first rib resections were completed on 48 patients for TO decompression at our institution during the study time period. Of the 48 patients, 44 returned to their baseline functional status and resumed work or prior athletic activity. There were 23 operations performed within 14 days of symptom onset and 28 completed after more than 14 days of symptoms. Descriptive analysis comparing the two presentation groups can be found in Table I. Demographics were overall similar between two presenting groups except those who presented chronically were more likely to have been diagnosed with DVT in the upper extremity ($P = .031$) and pulmonary embolism ($P = .012$) before a VTOS diagnosis when compared with those who presented acutely. We also had six patients with intermittent subclavian vein obstruction with swelling and discoloration of the upper extremity without thrombosis, that is, McCleery syndrome (chronic VTOS n = 4; acute VTOS n = 2).

In terms of preoperative vein patency, those who presented acutely were more likely to have an occluded axillosubclavian vein (acute 82.6% vs chronic 53.6%; $P = .029$). For treatment modalities, acute presenters were more likely to undergo thrombolysis ($P < .001$) and all acute presenters underwent balloon venoplasty ($P = .001$) at time of thrombolysis or decompression surgery. Of the 15 patients who presented with a chronic axillosubclavian vein occlusion, a venogram was performed on all and 8 received thrombolysis. Approximately 47% of patients received a venous stent that was evenly distributed between two presentation groups ($P = .921$). Most important, there was no difference in return to baseline functional status between those who presented acutely and those who presented late ($P = .647$).

The 30-day morbidity after 51 first rib resections included no pneumothoraces, no lymph leaks, two surgical site hematomas with associated hemothorax in one patient, two surgical site infections, and only three returns to the operating room. The returns included surgical site washout of a superficial wound infection, wound hematoma evacuation, and placement of a chest tube for a hemothorax. One patient returned to the operating room within 30 days for venography and planned subclavian intervention.

A univariate analysis was calculated for those who failed to return to baseline after rib resection. The outcomes can be found in Table II. This analysis suggested a diagnosis of effort thrombosis was protective in terms of symptom resolution ($P = .004$). Additionally, patients with secondary VTOS (n = 5) had worse outcomes (odds ratio, 32.25; 95% confidence interval, 3.29-316.19; $P = .003$) but, given the wide confidence interval and low number, no definitive conclusion can be formed.

Kaplan-Meier estimates were generated for patency rates, with differences between acuity of presentation and operative stent use being assessed (Fig, *A-C*). There was no difference between acute and chronic presentation for loss of primary patency ($P = .241$; Fig, *A*). There was no difference for operative stent use for loss of primary patency ($P = .437$; Fig, *B*) and loss of primary-assisted patency ($P = .913$; Fig, *C*). For all patients, the average length of follow-up was 18 months (median, 13 months; range, 19 days to 66 months). The mean follow-up for the stenting group was 20 months (median, 15 months; range, 1-66 months). Seven procedures in five patients were necessary to achieve primary-assisted patency. Four of the five patients were in the nonstent group. Two required stenting and the other two underwent venoplasty alone. The remaining patient had a stent placed during the initial surgery and developed recurrent venous congestion symptoms 18 months postoperatively after a blunt, traumatic injury to his shoulder girdle and clavicle. Attempted venoplasty was

Table I. Descriptive analysis of clinical and demographic variables by timing of initial presentation of venous thoracic outlet syndrome (*VTOS*) (n = 51)

	Total (n = 51)	Acute (n = 23)	Subacute/chronic (n = 28)	*P* value[a]
Age at diagnosis	31.9 ± 14.6	29.7 ± 12.8	33.7 ± 16.0	.336
Sex, female	27 (52.9)	13 (56.5)	14 (50.0)	.642
African American [vs Caucasian]	2 (3.9)	0 (0.0)	2 (7.1)	.497
Hypercoagulability	1 (2.1)	0 (0.0)	1 (4.0)	1.000
FHx hypercoagulability	6 (11.8)	4 (17.4)	2 (7.1)	.390
History of upper extremity DVT	9 (17.7)	1 (4.4)	8 (28.6)	**.031**
History of PE	7 (13.7)	0 (0.0)	7 (25.0)	**.012**
Cancer	2 (3.9)	2 (8.7)	0 (0.0)	.198
CKD	2 (3.9)	0 (0.0)	2 (7.1)	.495
OCP use	6 (12.5)	4 (17.4)	2 (8.0)	.407
Smoking status				.849
Never	30 (58.8)	13 (56.5)	17 (60.7)	
Former	14 (27.5)	6 (26.1)	8 (28.6)	
Current	7 (13.7)	4 (17.4)	3 (10.7)	
Right-sided VTOS	32 (64.0)	14 (60.9)	18 (66.7)	.670
Effort thrombosis	45 (88.2)	21 (91.3)	24 (85.7)	.678
History of trauma	2 (4.0)	1 (4.4)	1 (3.7)	1.000
Presence of inciting factor	5 (10.0)	1 (4.4)	4 (14.8)	.357
Athlete/active	32 (68.1)	14 (70.0)	18 (66.7)	.808
Preoperative venous occlusion	34 (66.7)	19 (82.6)	15 (53.6)	**.029**
Operative thrombolysis	30 (58.8)	22 (95.7)	8 (28.6)	**<.001**
Operative balloon venoplasty	40 (78.4)	23 (100.0)	17 (60.7)	**.001**
Operative stenting	24 (47.1)	11 (47.8)	13 (46.4)	.921
Failure of symptom resolution	4 (7.8)	2 (8.7)	2 (7.1)	1.000
Loss of primary patency	15 (29.4)	8 (34.8)	7 (25.0)	.446
Loss of primary assisted patency	9 (17.7)	4 (17.4)	5 (17.9)	1.000
Loss of secondary patency	8 (15.7)	4 (17.4)	4 (14.3)	1.000

CKD, Chronic kidney disease; *DVT*, deep vein thrombosis; *FHx*, family history; *OCP*, oral contraceptive pill; *PE*, pulmonary embolism.
Values are frequency (%) or mean ± standard deviation.
Boldface entries indicate statistical significance.
[a]Fisher's exact test, χ^2 test, or *t*-test, as appropriate.

unsuccessful and a jugular vein turndown was successfully performed.

DISCUSSION

In patients who present acutely with effort thrombosis, venography and catheter-directed thrombolytic therapy is used from the outset. Adjunctive use of gentle balloon venoplasty was occasionally used at completion of lytic therapy and surgical decompression surgery was typically performed within 24 hours of lytic therapy cessation. The initial technique described by Kunkel and Machleder included a 3-month interval of anticoagulation between the initial thrombolysis and the transaxillary first rib resection and scalenectomy.[15,16] Subsequent adoption and analysis of this strategy was concerning for a high rate of vein rethrombosis (approximately 10%) before the definitive surgery.[17] We have adopted the approach as described by Caparrelli and Freischlag[18] of consolidating the decompression surgery during the index admission, which has shown no increased bleeding risk or loss of vein patency. Based on our understanding of the current literature, we believe that delay of TO decompression only prolongs the period of incapacitation in this young and active patient population.

The chronic VTOS group was a more heterogeneous group. Their background consisted of patients who underwent thrombolysis at an outside facility before referral, patients who had a failed attempt of medical (anticoagulation) management, patients with a delay in diagnosis or misdiagnosis, and patients who had a functional, intermittent obstruction (McCleery syndrome). The higher incidence of upper extremity DVT and pulmonary embolism in this group was presumably due to a delay in diagnosis or an attempt at medical management with anticoagulation rather than a hypercoagulable state or recurrent VTOS. For patients

Table II. Logistic regression for loss of resolution of functional status among patients with venous thoracic outlet syndrome (*VTOS*) receiving first rib resection (n = 51)

	Univariable analysis	
Variable	**OR (95% CI)**	***P* value**
Age at diagnosis	1.05 (0.99-1.11)	.132
Sex, female	0.56 (0.09-3.67)	.546
African American vs Caucasian	11.00 (0.57-211.17)	.112
Hypercoagulability	—	—
Family history of hypercoagulability	2.05 (0.19-22.15)	.554
History of DVT	3.71 (0.52-26.42)	.190
History of PE	1.67 (0.16-17.53)	.671
Cancer	11.25 (0.59-215.90)	.108
CKD	11.25 (0.59-215.90)	.108
OCP use	—	—
Smoking status [vs never]		
Former	7.91 (0.74-84.37)	.087
Current	4.83 (0.26-88.53)	.288
Right-sided VTOS	0.11 (0.01-1.10)	.061
Effort thrombosis	0.02 (0.00-0.29)	**.004**
History of trauma	—	—
Presence of inciting factor	32.25 (3.29-316.19)	**.003**
Athlete/active	0.13 (0.01-1.37)	.089
Preoperative venous occlusion	—	—
Operative thrombolysis	1.06 (0.16-6.94)	.955
Operative balloon venoplasty	—	—
Operative stenting	0.73 (0.11-4.77)	.740

CI, Confidence interval; *CKD*, chronic kidney disease; *DVT*, deep vein thrombosis; *OCP*, oral contraceptive pill; *OR*, odds ratio; *PE*, pulmonary embolism. Boldface entries indicate statistical significance.

presenting late, those who demonstrated vein patency proceeded directly to surgical decompression with intraoperative venography to assess the need for endovascular venous intervention. More than one-half that presented with chronic axillosubclavian vein occlusion (8/15) had an attempt at thrombolysis to reduce clot burden before first rib resection. Before evaluation at our facility, three patients had received catheter-directed thrombolysis with the intent to forgo TO decompression, whereas 16 patients were maintained on chronic anticoagulation. The presenting vein patency status did not seem to impact our long-term outcomes. The two patients who we reported as treatment failures in the chronic VTOS group were not primary VTOS and had a history of a central venous catheter. One of these patients was in his 70s on hemodialysis with an ipsilateral extremity fistula, and the other patient had a previous subclavian vein port as a result of poor peripheral access.

There were two treatment failures in the effort thrombosis group. One of the patients was a 53-year-old man with a history of external beam radiation and chemotherapy for an upper esophageal cancer. The second patient was a 24-year-old man treated 4 years prior successfully on the contralateral side for VTOS who presented acutely with arm swelling. The operative reports described chronic thrombus and venous scarring with well-established collaterals, but the patient's symptoms originated only 3 to 4 days before presentation.

We performed venous stenting on 24 patients (47%) at the time of decompression surgery. Of these 24 patients, 11 were in the acute group and 13 in the chronic surgical group (47.8% and 46.4%, respectively; $P = .92$). There is considerable debate with regard to the management of the intrinsic subclavian vein defect after decompression. Methods to address the internal scarring and stenosis include anticoagulation and observation, balloon venoplasty, venous stenting, or open reconstruction. Our approach was individualized to the patient and anatomic lesion location. Patients who failed balloon venoplasty owing to immediate recoil, more than 50% residual stenosis, poor maturation of venous collaterals, and focal more central occlusions were considered for placement of conventional (ie, not drug-eluting) self-expanding nitinol stents. This shortened the postoperative duration of anticoagulation. Stenting was avoided in patients younger than 20 years of age, long occlusions,

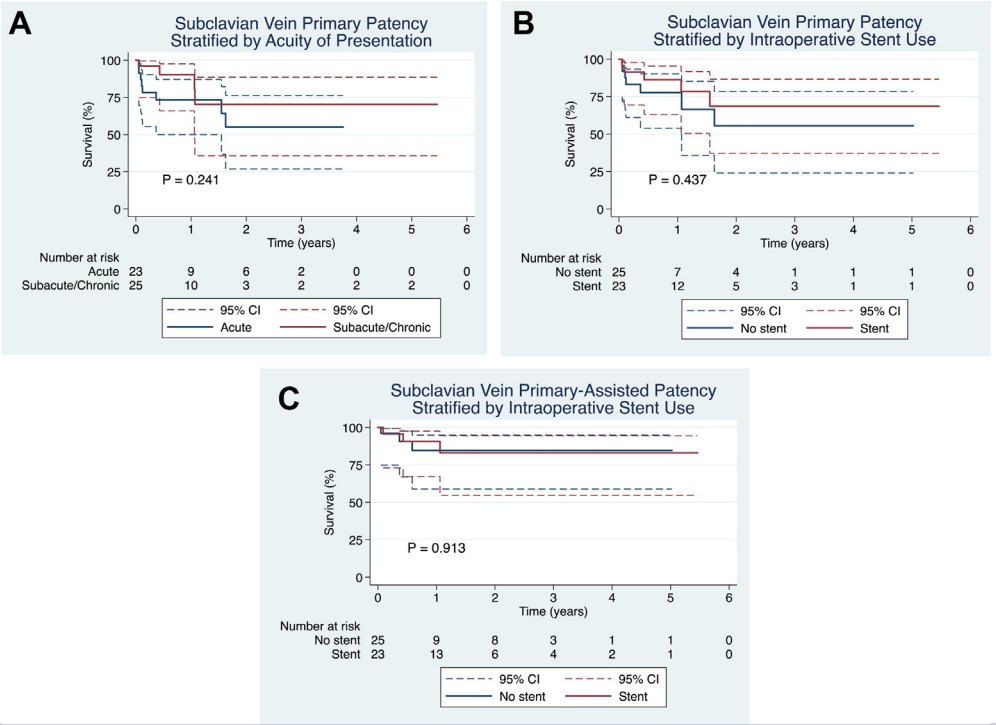

Fig. A, Comparison of subclavian vein primary patency with Kaplan-Meier life table analysis of patients presenting with acute vs subacute/chronic venous thoracic outlet syndrome (VTOS).* **B,** Comparison of subclavian vein primary patency with Kaplan-Meier life table analysis according to placement of a venous stent after first rib resection.* **C,** Comparison of subclavian vein primary-assisted patency according to placement of a venous stent after first rib resection.* *Includes number of patients at risk and confidence intervals (*CI*).

hypercoagulable states, and smaller vein diameters (<10 mm). Urschel et al[19] reported a series of 22 patients who received axillary-subclavian vein stents for effort thrombosis without decompression and all occluded within 6 weeks. Kreienberg reported the Albany experience from 1994 to 2000 of 23 patients with Paget-Schroetter syndrome. After a 3.5-year follow-up, 9 of 14 veins treated with stents were patent compared with 100% of the veins treated with balloon venoplasty alone. Three patients with stent occlusion were diagnosed with factor V Leiden. The patients with vein occlusions were minimally symptomatic, except for one patient whose symptoms resolved after a jugular vein turndown. The conclusion of this study was that short segment venous lesions that persist after TO decompression and venoplasty can be safely treated with self-expanding stents.[20] Stone reported the 30-year Dartmouth review of 36 patients who presented with acute axillosubclavian vein occlusion. In this study, 11 of the 36 patients underwent selective venous stenting for residual central vein stenosis. They reported 100% and 94% overall patency rates at 1 and 5 years, respectively.[21]

In our series, patient outcomes after selective venous stenting were very good and equivalent to the nonstented cohort. Stents were placed at the discretion of the surgeon following TO decompression and balloon venoplasty. Stents were placed in patients with poor collateral development based on venography, in more centrally located lesions, and in those patients who desired to avoid a secondary aesthetically displeasing incision. Patients had postoperative surveillance venous duplexes performed at 1 month, 6 months, and then annually. The venograms of the patients presenting acutely with effort thrombosis demonstrated intraluminal synechiae and webs after thrombolysis. These findings support the theory of chronic, repetitive venous injury rather than a single insult leading to acute thrombosis. We propose effort thrombosis represents one point on the VTOS continuum. This argument is strengthened by the results of our study demonstrating similar functional outcomes between the patients presenting acutely and those who present late. Given the variety of venous therapeutic adjuncts used from thrombolysis and balloon venoplasty to a liberal use of stents, the common element to our successful outcomes in chronic VTOS was operative decompression. A multicenter randomized controlled trial will be necessary to direct the future treatment paradigm for chronic VTOS.

There are several limitations of our study. The retrospective nature of our investigation weakens our conclusion that the functional outcomes of surgical management of acute and chronic VTOS are similar. We are unable

to confirm the thrombus burden and extent of venous injury are comparable between the two groups. Second, the chronic VTOS group had a higher incidence of vein patency on presentation (80% vs 20%; $P = .016$), a lower use of thrombolysis (26.7% vs 73.3%; $P < .001$), and fewer balloon venoplasties performed (42.5% vs 57.5%; $P < .001$). The acute VTOS group presented to our institution more often with a chronically occluded subclavian vein in conjunction with acute thrombosis of the axillary vein and draining collaterals. It is unclear why this occurred and is a limiting factor of our retrospective review. Last, we did not use a validated tool to assess a successful functional outcome. We defined a successful outcome as a return to previous quality of life, sports activity, or vocation as a surrogate for symptom resolution and vein patency. This strategy may be a stretch; we know from our retrospective review that some patients had rethrombosis after surgery but remained asymptomatic.

We acknowledge the inclusion of secondary VTOS patients in this study could confound the results and weaken our conclusions. One of the questions in the beginning of the project was the role of TO decompression in secondary VTOS. We included all patients diagnosed with primary and secondary VTOS who had TO decompression surgery during the period reviewed. The number of patients with secondary VTOS (n = 5) did not influence the results and conclusion of the study. The majority of this group had no improvement in symptoms after surgery, but we are unable to make any recommendations given the low number.

Our study was not powered to determine risk factors associated with symptom persistence after surgical decompression. Postoperative outcome reporting to a national database may be beneficial to shape future management and disseminate best practice for chronic VTOS. This database may uncover risk factors to predict surgical failure.

CONCLUSIONS

Patients with acute and chronic VTOS returned to their preintervention functional baseline after TO decompression in more than 90% of cases. There were four patients spread evenly among the groups considered to be treatment failures. Based on our study results, patients with chronic VTOS benefit as much from TO decompression as those with acute VTOS. Our study was not powered to determine risk factors for treatment failure. A national database or large collaborative may be required to elicit these factors to guide future therapies.

AUTHOR CONTRIBUTIONS

Conception and design: SC
Analysis and interpretation: SC, MS, ML, JB, ME
Data collection: SC, ML
Writing the article: SC, MS, ML
Critical revision of the article: SC, MS, ML, JB, ME
Final approval of the article: SC, MS, ML, JB, ME
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