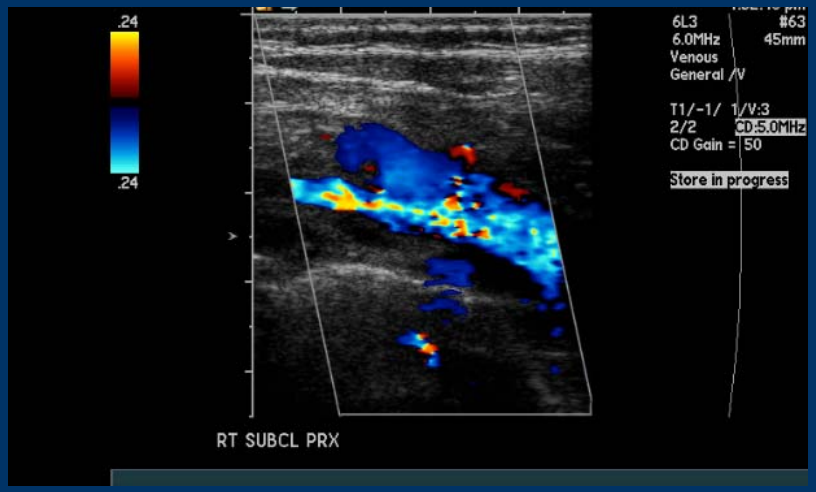
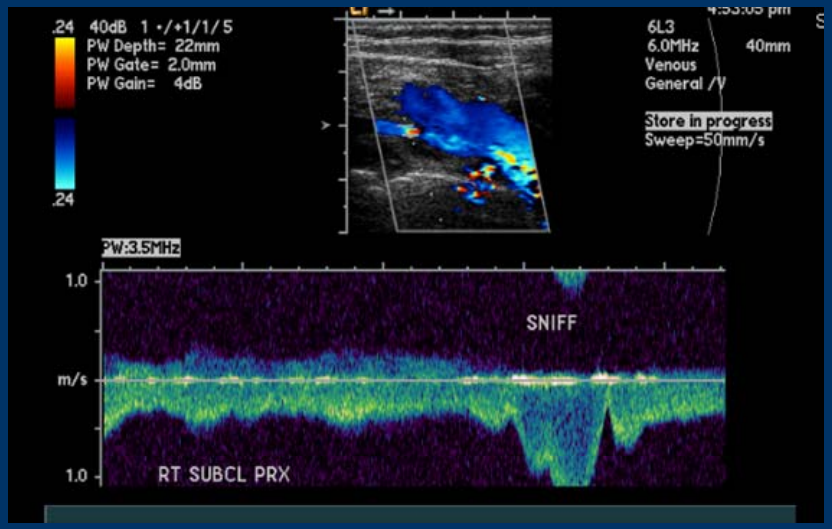
HPI

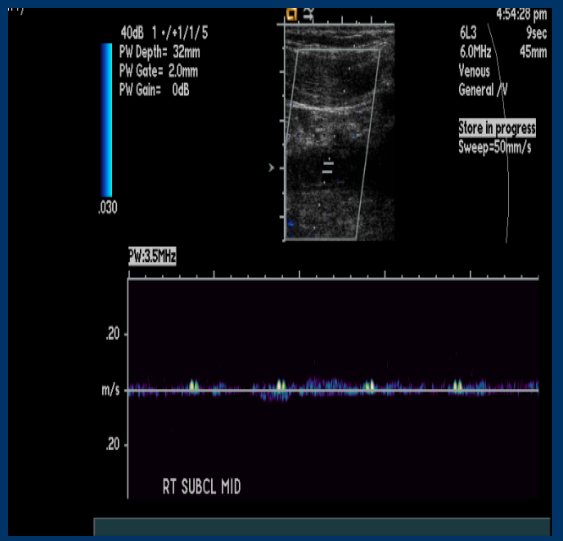
22 yo female otherwise healthy college undergraduate on the rowing team who presented to the ED c/o right upper extremity swelling and heaviness after a strenuous workout. No previous history. UTZ confirmed a RUE DVT.

Ultrasound


.24
.24
6L3
6.0MHz
Venous
General /V
#63
45mm
T1/-1/ 1/V:3
2/2
CD:5.0MHz
CD Gain = 50
Store in progress
RT SUBCL PRX

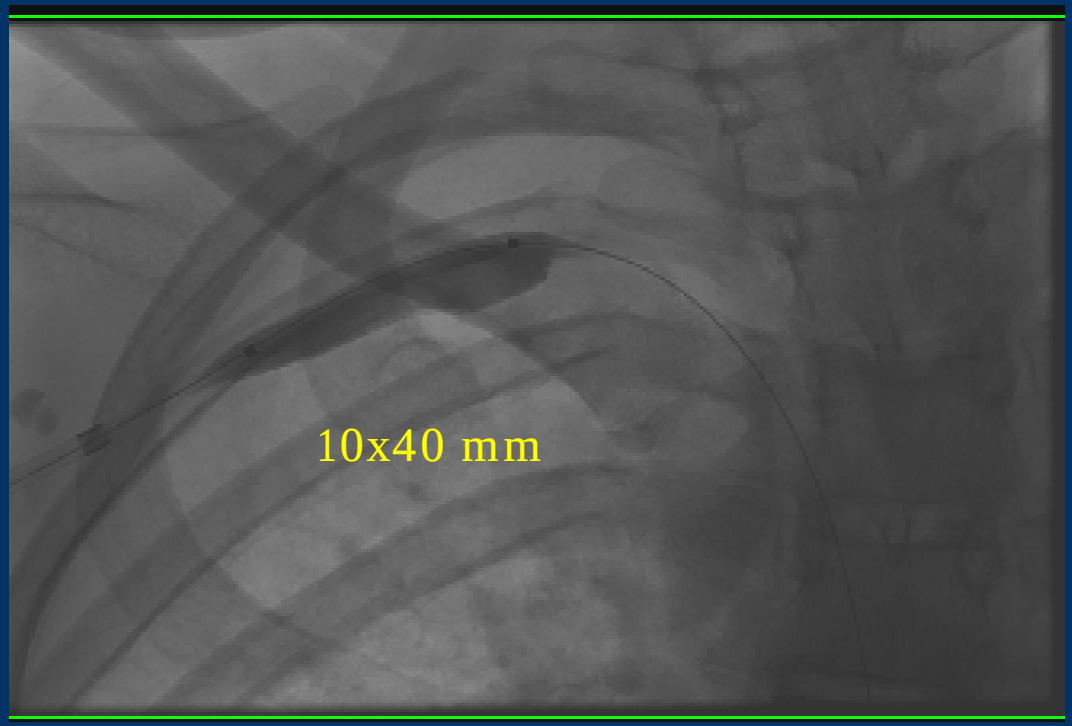

.24
40dB 1 •/•1/1/5
PW Depth= 22mm
PW Gate= 2.0mm
PW Gain= 4dB
.24
6L3
6.0MHz
Venous
General /V
40mm
Store in progress
Sweep=50mm/s
PW:3.5MHz
1.0
m/s
1.0
SNIFF
RT SUBCL PRX

Right SC thrombosis (mid/distal)



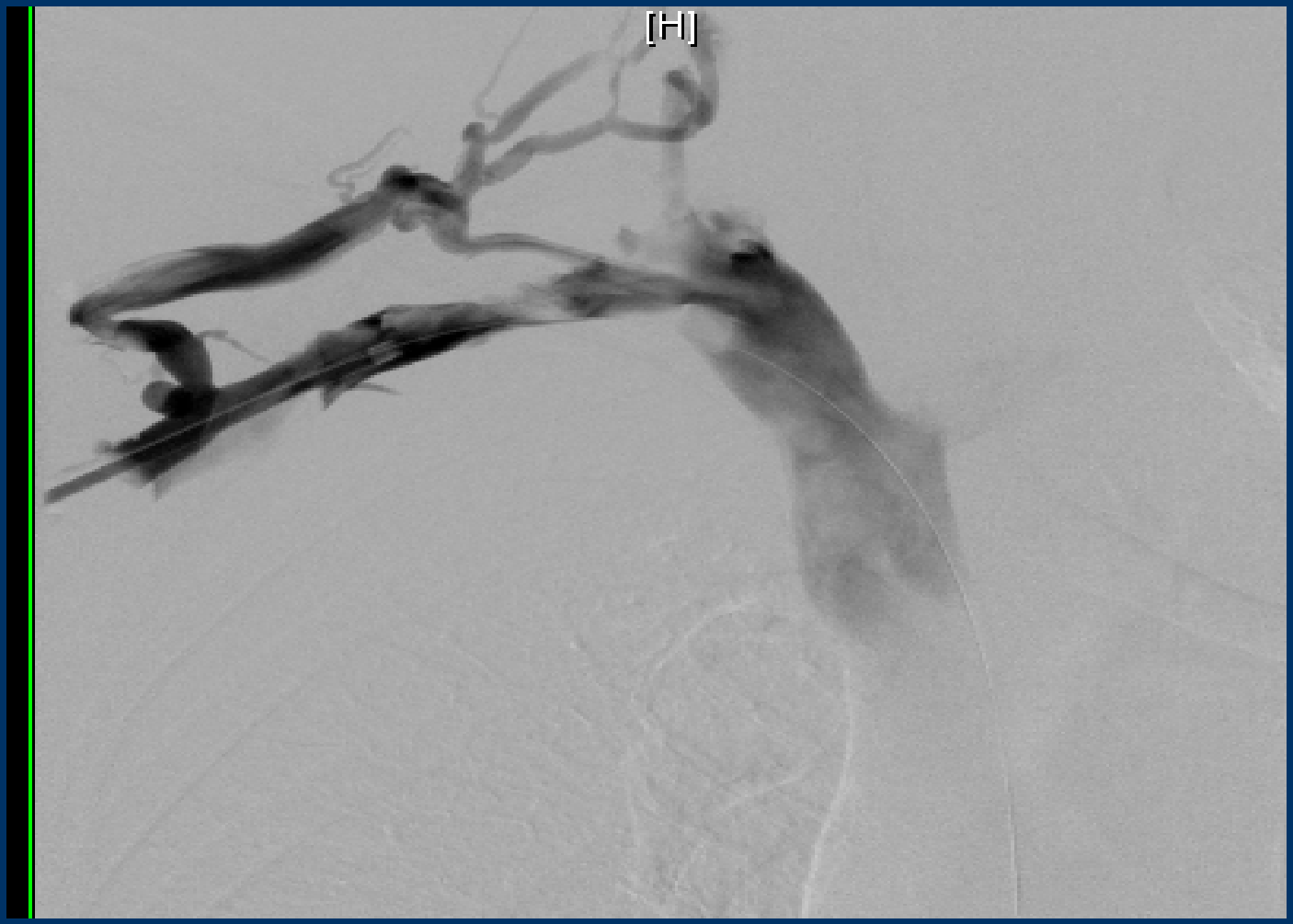
Venogram

Angioplasty



Thrombectomy

Completion

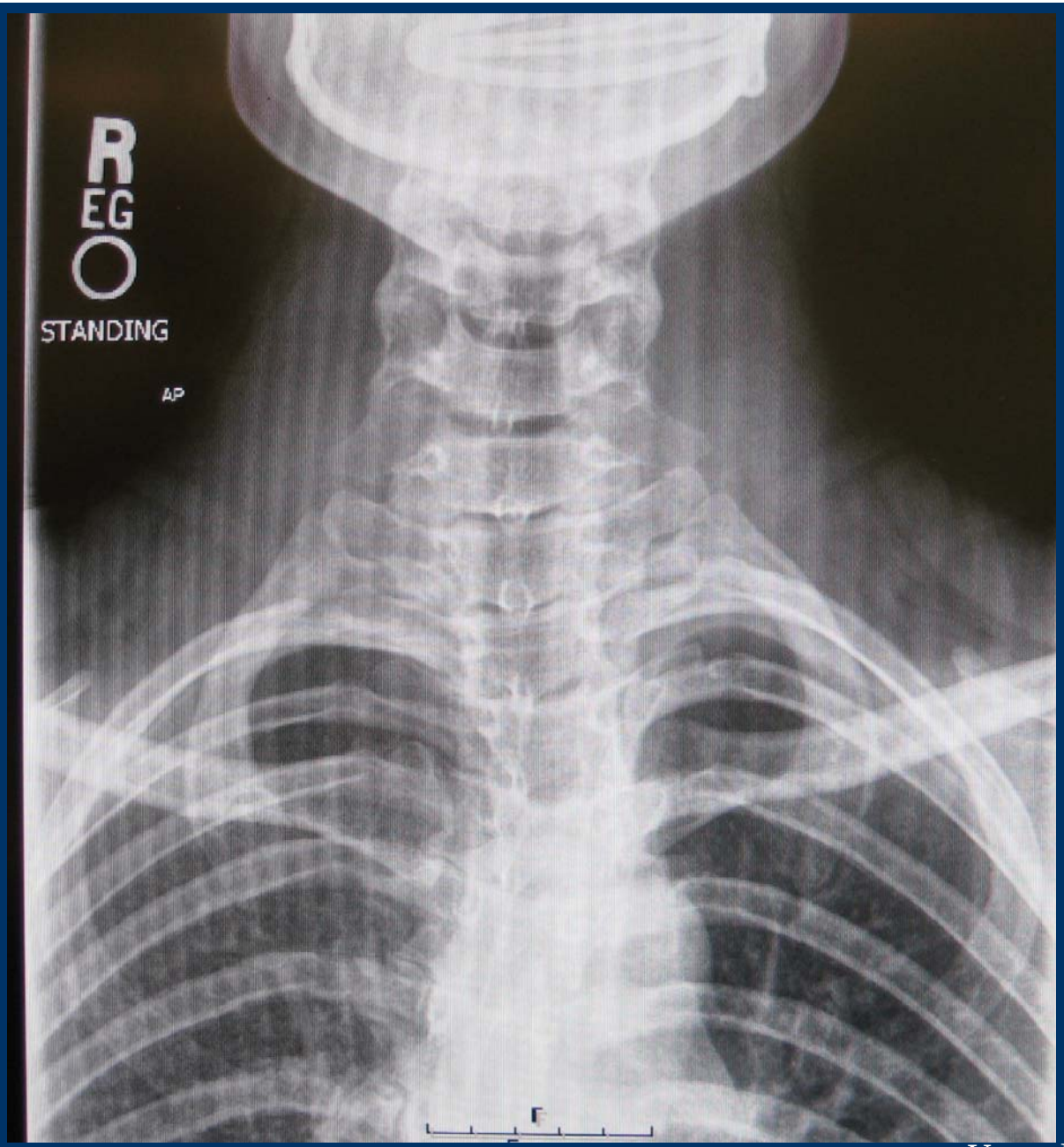


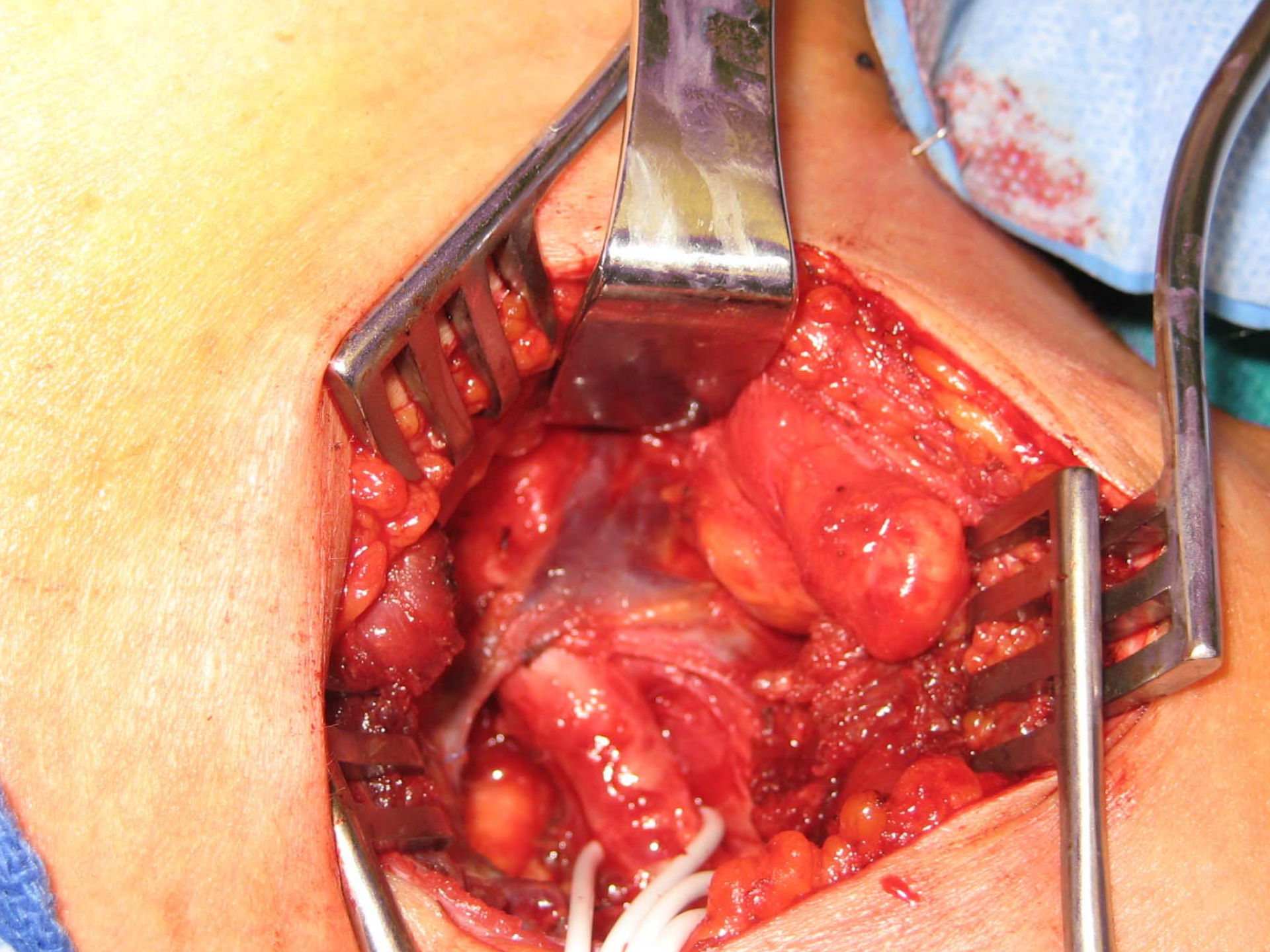
Interval History

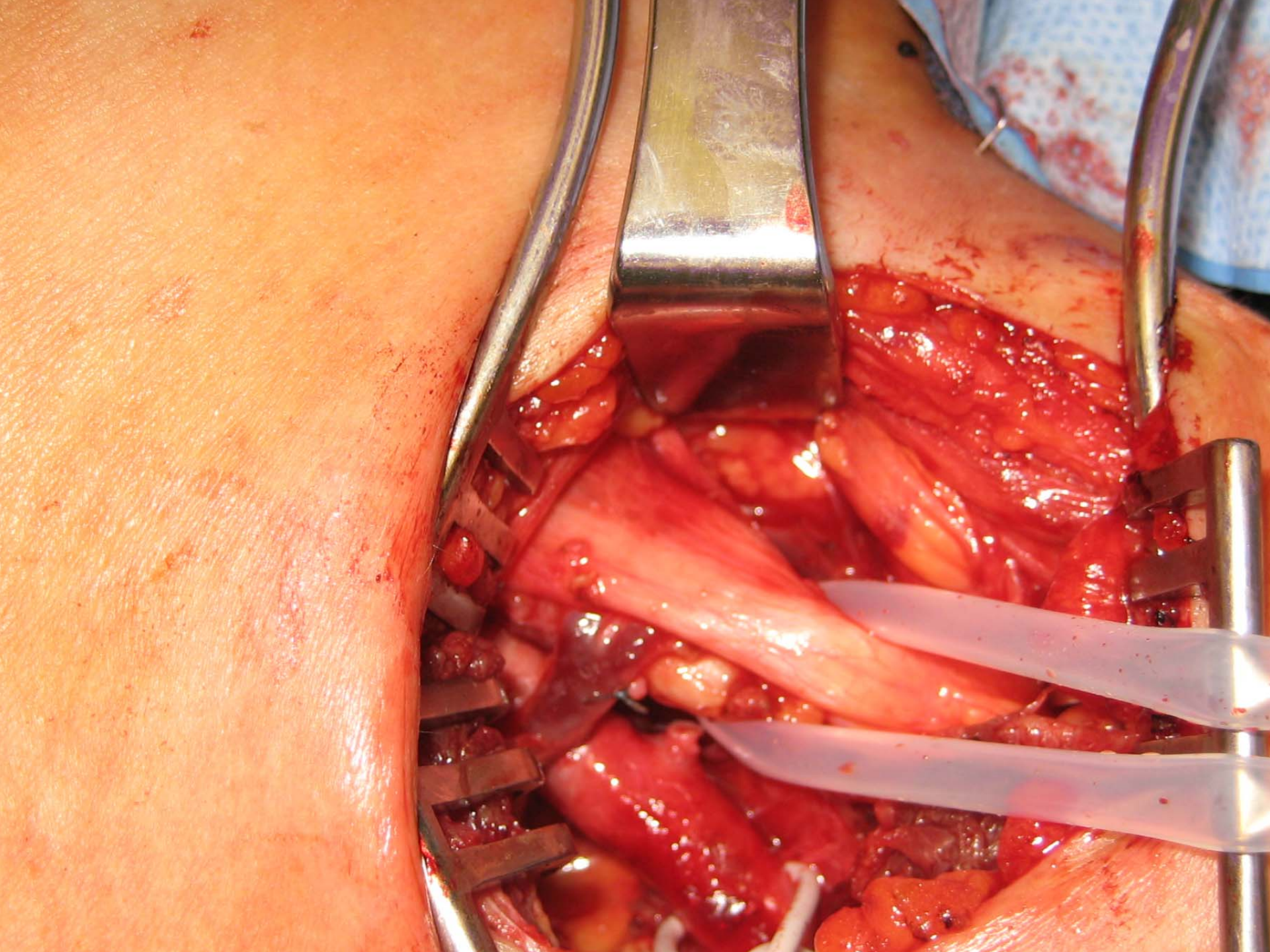
- Treated with coumadin
- Experienced a recurrent symptom of RUE swelling and fatigue while on coumadin
- Negative DVT study

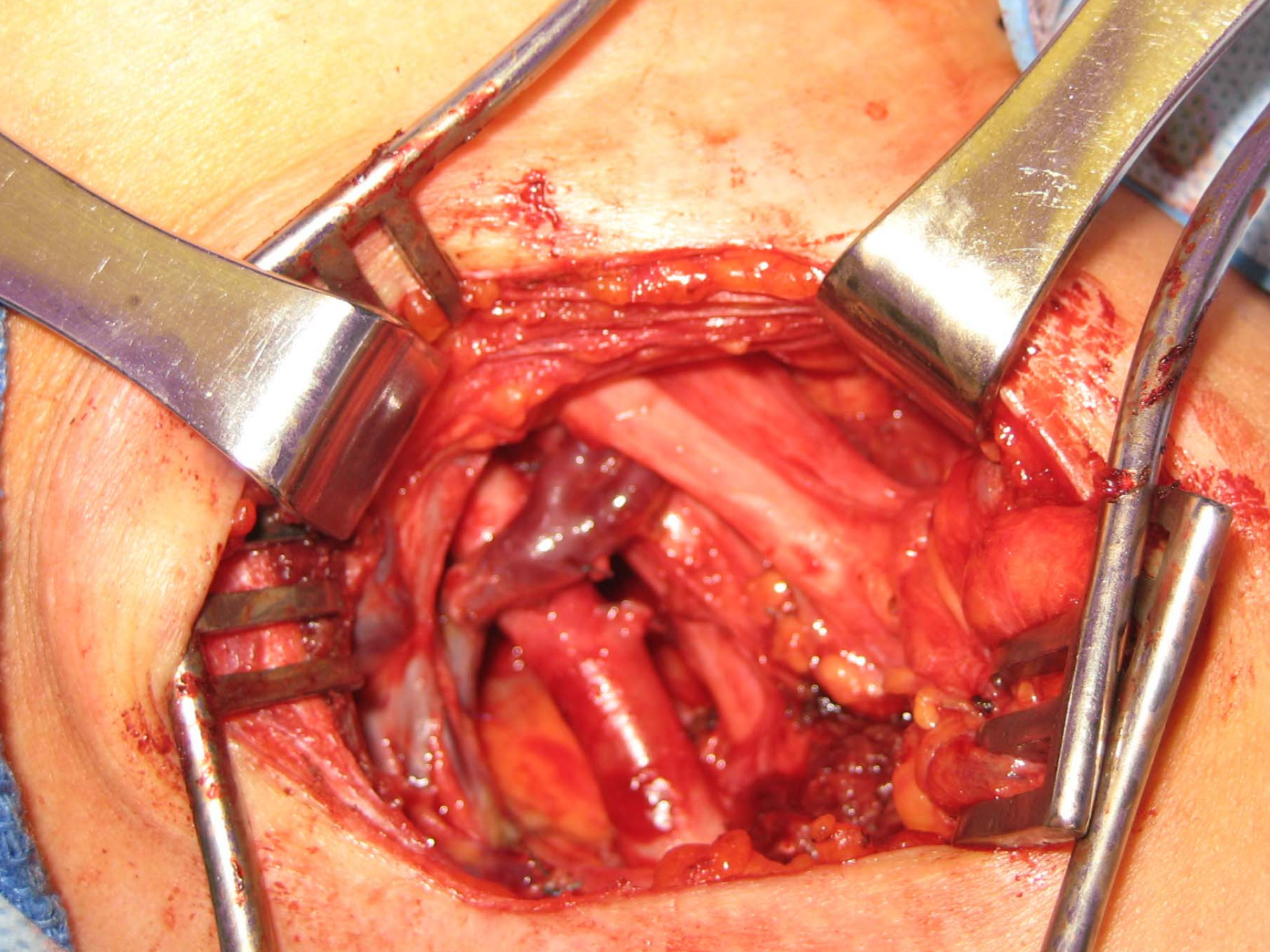
Operation :

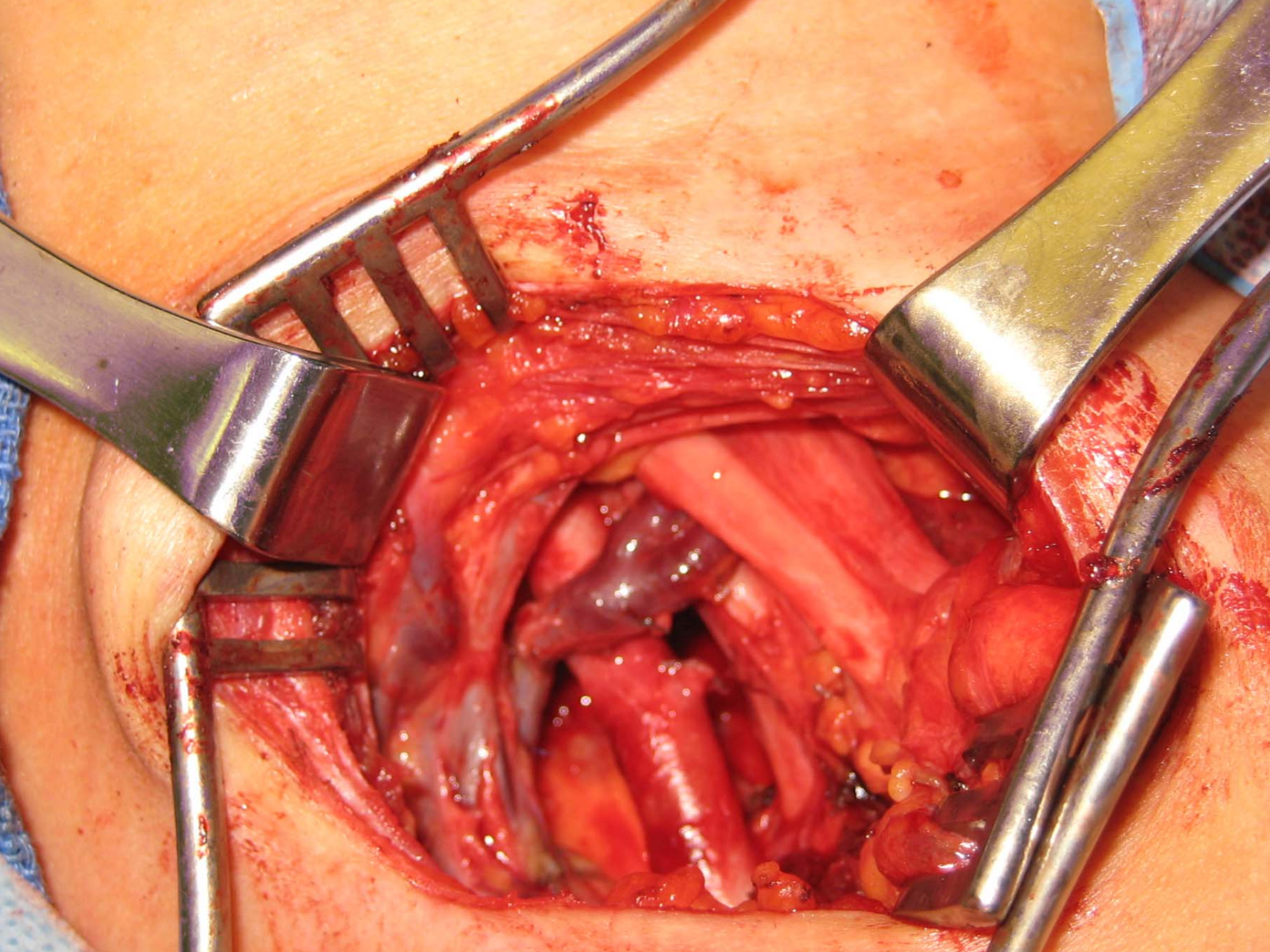
Right 1st rib resection

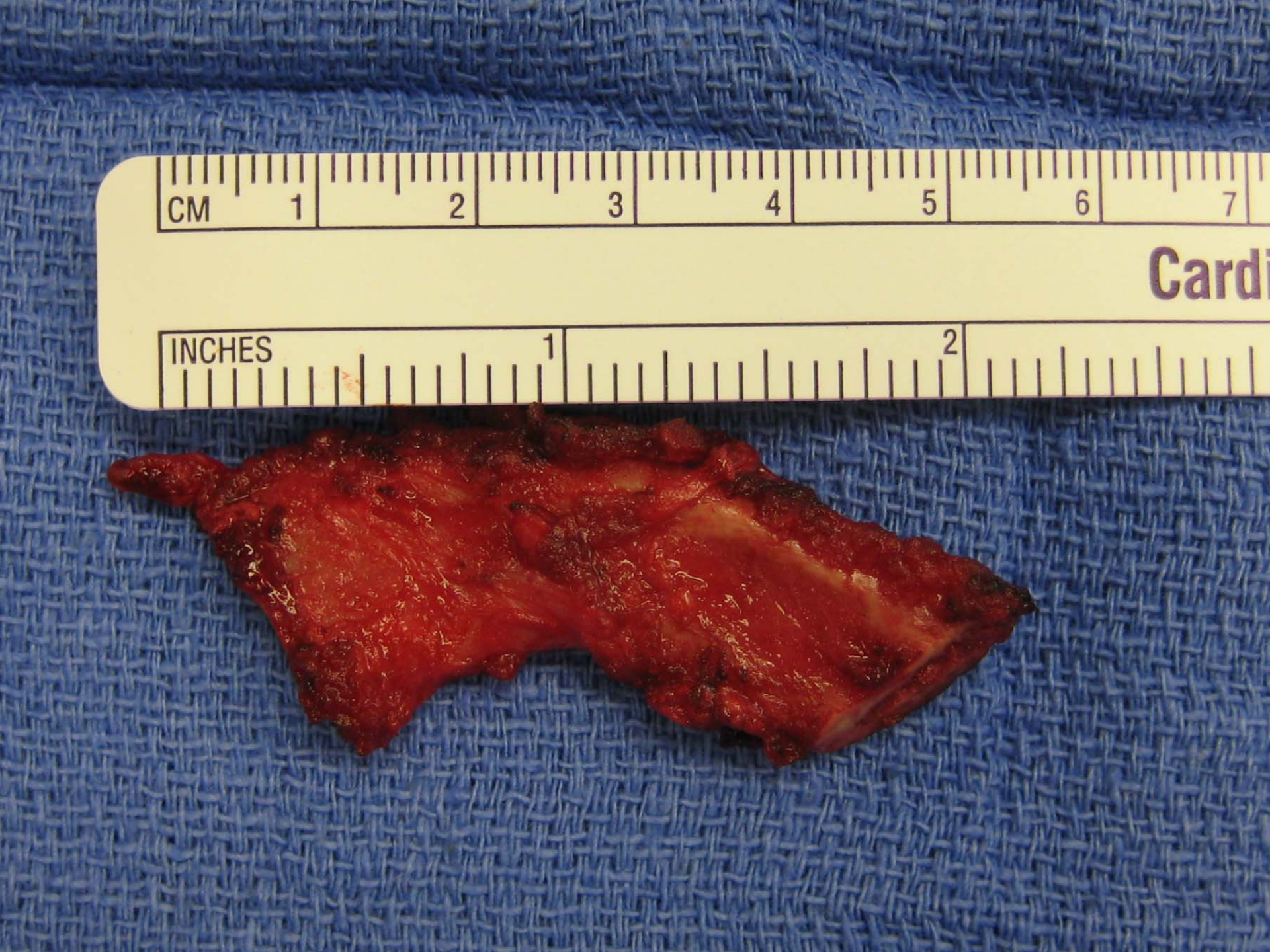

R
EG
STANDING
AP










CM 1 2 3 4 5 6 7
INCHES 1 2

Long-term thrombotic recurrence after nonoperative management of Paget-Schroetter syndrome

Jason T. Lee, MD,a John K. Karwowski, MD,a E. John Harris, MD,a Jason S. Haukoos, MD, MS,b,c and **Cornelius Olcott IV, MD,a** *Stanford, Calif; and Denver, Colo*

Retrospective review
1996 to 2005

N=64

1st Rib resection (29)
Within 3 months

Nonoperative (35), warfarin x 3 months (goal INR 2-3)

-8 (23%) developed
Recurrent symptoms
Leading to 1st rib resection

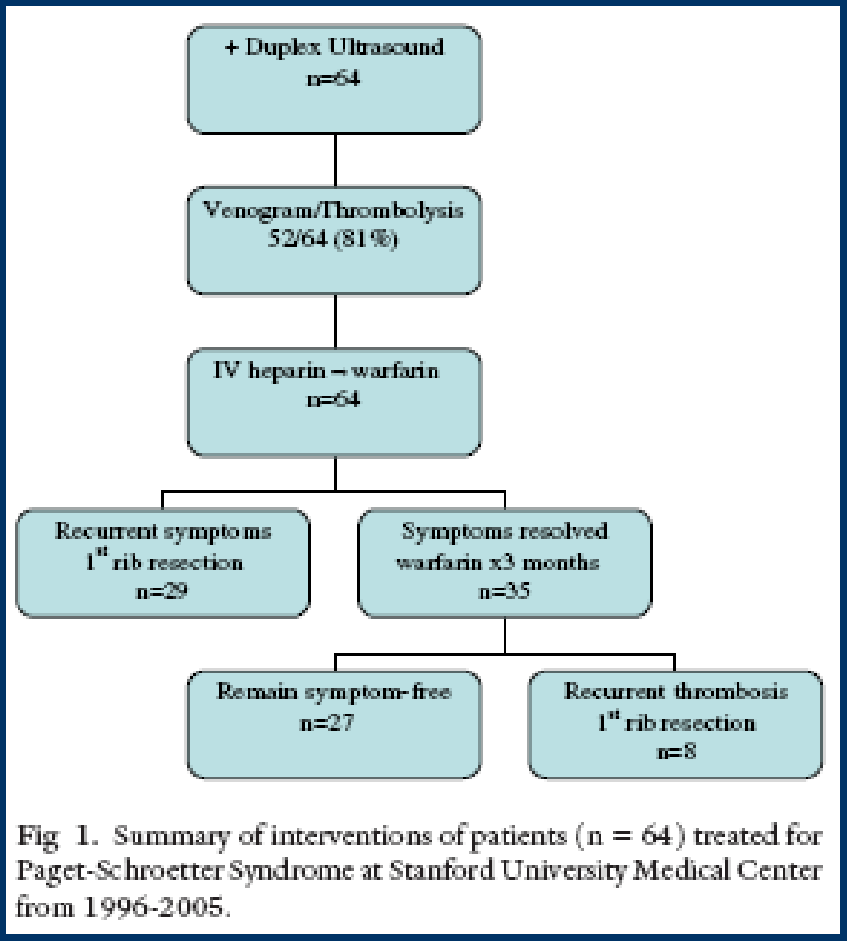


Fig 1. Summary of interventions of patients (n = 64) treated for Paget-Schroetter Syndrome at Stanford University Medical Center from 1996-2005.

Indications for early intervention (29):

1) Persistent or recurrent venous hypertension (20)
2) Recurrent or new thrombus (5)
3) Obstruction of venous collaterals with abduction/external rotation
4) Persistent or recurrent vein injury (wall thickening) (4)

Technical success (93%)

Table I. Clinical and venographic features of all 64 Paget-Schroetter patients treated from 1996 to 2005

Variable	*Total (n = 64)*	*Early operation (n = 29)*	*Nonoperative (n = 35)*
Mean age (y)	32	31	32
Male sex (%)	48	38	57
Competitive athlete (%)	33	34	31
Right arm involvement (%)	66	69	63
Dominant arm (%)	67	69	66
Delayed therapy (%)*	16	15	17
Total occlusion (%)	83	85	81
Thrombolytic therapy (%)	81	78	83
Balloon venoplasty (%)	45	41	48
Mechanical thrombectomy (%)	17	19	16
Stent placement (%)	5	4	6
Complete response to thrombolysis	78	81	76
Residual stenosis after thrombolysis	90	96	86
Patent last duplex (%)	97	96	97
Follow-up time (mo)	53	51	54

The early-operation group was treated with thoracic outlet decompression within the first 6 months of thrombolysis. The nonoperative group all had resolution of symptoms and completed a regimen of outpatient anticoagulation. *P* values comparing the two groups for all variables were >.05.

J Vasc Surg 2006; 43: 1236-43

Table II. Summary of bivariate analyses of clinical and venographic predictors of long-term thrombotic recurrence after initial nonoperative treatment

Variable	*Initial nonoperative (n = 35)*	*Group A recurrent (n = 8)*	*Group B stable (n = 27)*	P *value*
Mean age (y)	32	22	36	.01
Male sex (%)	57	37	63	.3
Competitive athlete (%)	31	38	30	.7
Right arm involvement (%)	63	88	56	.2
Dominant arm (%)	66	75	63	.7
Delayed therapy (%)*	17	13	17	.3
Total occlusion (%)	81	88	78	.5
Thrombolytic therapy (%)	83	100	78	.3
Balloon venoplasty (%)	48	50	48	0.99
Mechanical thrombectomy (%)	16	25	13	.6
Stent placement (%)	6	25	0	.05
Complete response to thrombolysis	76	88	71	.6
Residual stenosis after thrombolysis	86	86	86	0.99
Duration of anticoagulation (mo)	5	5	5	.9
Patent last duplex scan (%)	97	100	96	0.99
Follow-up time (mo)	54	51	55	.8

Group A includes patients in long-term follow-up who developed recurrent thrombosis and subsequently underwent thoracic outlet decompression. Group B patients had no thrombotic recurrences and remained clinically asymptomatic in follow-up.

*Defined as greater than 1 week.

8/35 patients with recurrent Sx at mean 13 ± 8 months

-Treated initially with thrombolysis then surgical decompression (1st Rib resection)

RESULTS

Table III. Clinical characteristics of patients who demonstrated a second episode of effort thrombosis after initial nonoperative therapy

Patient No.	*Age (y)*	*Sex*	*Athlete?*	*Initial venogram*	*Lysis response*	*Residual stenosis*	*Months of warfarin*	*Time to recurrence (mo)*
1	23	F	No	Partial occlusion/venoplasty/stent	Complete	Yes	12	14
6	20	M	No	Total occlusion/venoplasty/stent	Partial	Yes	6	12
13	16	M	Baseball	Total occlusion	Complete	Yes	6	10
10	23	F	No	Total occlusion/venoplasty	Complete	Yes	3	33
16	26	F	Weightlifting	Total occlusion	Complete	No	4	14
22	27	M	No	Total occlusion	Complete	No	3	7
28	23	F	Swimming	Total occlusion/mechanical thrombectomy	Complete	Yes	3	6
32	21	F	No	Total occlusion/mechanical thrombectomy/venoplasty	Complete	Yes	3	8

Postoperative complications:
3/8 Pneumothorax (no chest tube)
No lymphatic leaks or brachial plexus injuries

Conclusions

- Age < 28 years (50% recurrence)
- Avoid stent placement
- Nonoperative approach can be successfully used to manage even competitive athletes
- Use of balloon venoplasty or mechanical thrombectomy did not have any effect on recurrence
- Use of venography did not predict long term recurrence