Preoperative Embolization of a Large Mediastinal Tumor Using Detachable Coils

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CASE PRESENTATION

A 17-year-old adolescent boy presented with sudden-onset dyspnea after an appendectomy. Chest x-ray (Figure 1) revealed a large opacity occupying the right hemithorax. The patient was referred for thoracic surgery.

Further questioning revealed a 5-year history of dysphagia and dyspnea upon lying prone. High-resolution computed tomography of the thorax (Figure 2) showed a heterogeneous calcified mass that was 20 cm X 11 cm X 8 cm and compressing the main bronchi and great vessels, which is suggestive of teratoma.

Resection via a right thoracotomy was attempted, but the tumor was closely adherent to the mediastinum, and profuse bleeding was encountered from the tumor bed, resulting in significant hypotension. Hemostasis was obtained with difficulty, the thoracotomy was closed, and samples were sent for histology. Postoperatively, the patient showed symptoms of spinal cord ischemia. Magnetic resonance imaging localized the lesion to T5.

Initial histology indicated that the mass was potentially a solitary fibrous tumor of the pleura, but immunohistochemical staining was not entirely congruent. A second opinion diagnosed benign schwannoma but was atypical for the presence of multiple arteriovenous malformations. There was considerable mass effect exerted on vital structures, and the tumor was confirmed to be benign, intensifying the desire to definitively resect. This was tempered by the previously inflicted ischemic lesion to the spinal cord, from which the patient was fortunately recovering well.

Figure 1. Chest x-ray showing a large opacity in the right hemithorax.

Figure 2. A heterogeneous calcified mass in the thorax compressing the main bronchi and great vessels.

PROCEDURE DESCRIPTION

Multiple selective coil embolizations of feeding vessels were undertaken before further surgery. Initial angiography determined several tortuous feeding vessels arising from the right intercostal, subclavian, internal mammary, and thyrocervical arteries.

The origins of these vessels were selectively cannulated with a catheter. A Renegade STC® Microcatheter

Figure 3. Angiogram of the thyrocervical trunk branch showing significant supply to the tumor during the first session.

Figure 4. Several Interlock™ 0.018-inch Detachable Coils were successfully used to embolize the feeding vessels.

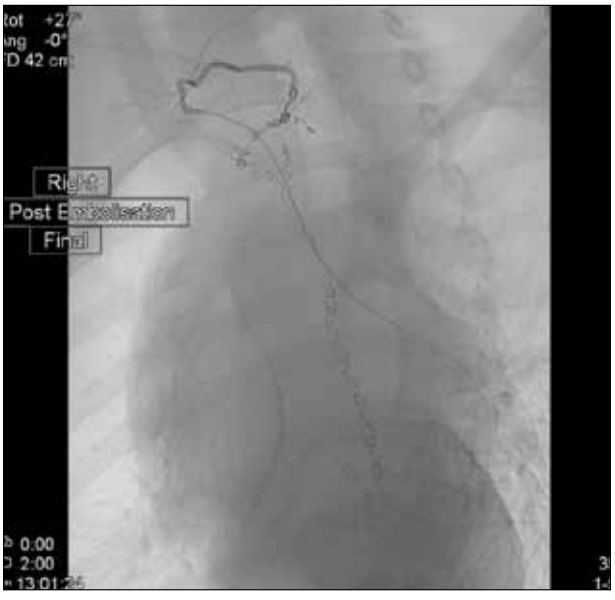

Figure 5. Final angiogram showing almost complete reduction in the tumor blood supply from this vessel.

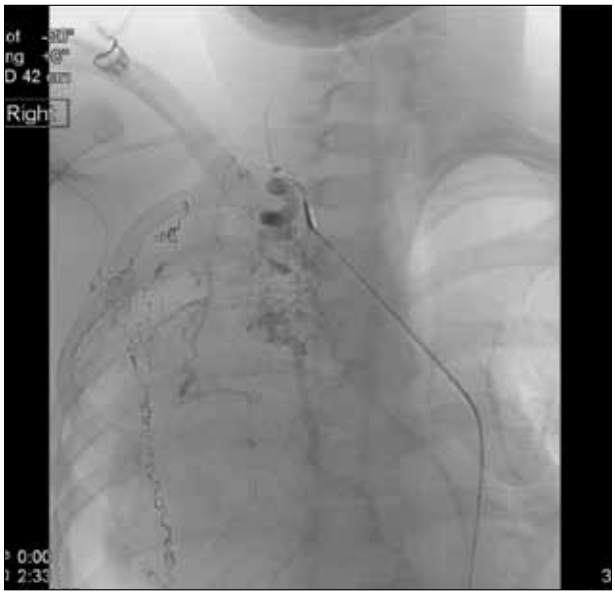

Figure 6. In the second session, further supply from the right internal mammary and subclavian branches was found on the angiogram. There was some early venous filling suggestive of arteriovenous malformation within the tumor.

was used to further super selectively cannulate the vessels. Due to the fact that the main catheter was just engaged into the orifice of the vessels, Interlock™ 0.018-inch Detachable Coils were used to allow greater control at the time of deployment and because fewer total coils were needed to embolize the tumor. Because of the coils' length, there was also less chance of distal migration into the arteriovenous shunts of the tumor. A range of coils (from 4 to 10 mm) was used with an angiographically successful outcome after two sessions. There was almost complete reduction in tumor blood supply without any serious complication (Figures 3-7).

Follow-up computed tomography angiography monitored for tumor shrinkage and watched for future resection.

DISCUSSION

In this selective case, we found that the Renegade STC® Microcatheter and Interlock™ Detachable Coil system were very useful tools in the interventional armamen-

Figure 7. Further Interlock™ 0.018-inch Detachable Coils were used to reduce the risk of distal migration of any coils into the arteriovenous shunts. There was almost complete embolization of the tumor blood supply at the end of the procedure, as shown.

tarium for treating such a large, complicated, mediastinal tumor. It allowed for accurate, controllable, convenient, and successful embolization before surgery without any untoward complication. We hope that this example will be useful for others who may encounter a similar interesting—but—complex case. ■

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