eight (57.2%) patients had head AIS 4, and one patient had head AIS 3. Cerebral infarcts were detected in four patients with PTV (29%) compared with three patients without PTV (20%) who developed infarcts (P = 0.68). When comparing patients with and without vasospasm, there was no significant difference in patient characteristics (Table 1). Only one patient with severe vasospasm was treated with vasopressors for blood pressure augmentation. Subsequent evaluation demonstrated no evidence of infarction. This patient survived and was discharged from the hospital and to a rehabilitation facility.

The overall mortality was 31 per cent. There were no significant differences in patient outcomes (mortality, ICP levels and management, ICU LOS, or hospital LOS) between patients with TBI with and without PTV.

The current prospective observational study sought to evaluate the incidence and clinical significance of cerebral vasospasm in patients with moderate to severe TBI. PTV occurs in nearly 50 per cent of patients with moderate to severe TBI. Although 29 per cent of patients with TBI with PTV developed ischemic infarcts during their hospital course, there was no statistical difference compared with those without PTV. Further studies examining the role of PTV treatment and extended functional outcome are warranted to determine if PTV is at all clinically significant.

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Retrograde Flow Upper Extremity Fillet Flap for Coverage of a Large Thoracic Wall Defect

Pedicled and free fillet flaps have been successfully used for the coverage of defects after traumatic amputations or oncologic resections.^{1–3} In our review of the literature, no previous description of using fillet flaps with retrograde flow was found. We present successful coverage of a large thoracic wall defect with a retrograde upper limb fillet flap. The main blood supply of the flap was based on retrograde blood flow from the radial artery.

We present a case of 64-year-old woman with a history of phyllodes tumor of the left breast operated several times over the last eight years resulting from multiple local recurrences (Fig. 1). The last operation was performed five months prior. The tumor had been conservatively resected along with the left subclavian artery as a result of its involvement with the tumor. The defect had been covered with a trapezius flap and vein graft had been used to reconstruct the continuity of the subclavian artery. However, the patient a few months

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FIG. 1. (Left) Recurrent phyllodes tumor of the left breast, extended to the axilla and the left upper limb. (Right) Seven months postoperatively.



FIG. 2. Extensive resection of the tumor along with the subclavian and the axillary artery, the scapula, and three ribs. Mesh was used to reconstruct the chest wall defect. A fillet flap was harvested and the radial vessels were dissected distally at the level of the wrist to be used for revascularization of the flap.

later presented to our department with a recurrent extensive tumor over the left thoracic wall, which extended to the axilla and the left arm. On physical examination the left upper limb had limited function as a result of involvement of the brachial plexus by the tumor. The preoperative plan was extensive resection of the tumor and coverage of the thoracic wall defect with a pedicled fillet flap from the left upper extremity. However, during the operation, the vein graft of the subclavian artery was found to be thrombosed and surrounded by the tumor; the scapula was also involved by the tumor and resected as well as three ribs, which were also resected. A large thoracic wall defect was created approximately 30×50 cm in size, which was unable to be covered by the soft tissue of the upper limb as a pedicled fillet flap as a result of extensive resection of the subclavian and the axillary artery. As a result of prolonged ischemia time

of the upper limb (8 hours), because the tumor resection was quite tedious, the muscles of the upper limb were sacrificed, and the radial artery and vein were dissected distally on the wrist to be used for revascularization of the upper extremity skin as a retrograde flow flap (Fig. 2). The contralateral thoracoacromial vessels were used as recipient vessels, and one arterial and two venous anastomoses were performed. The skin of the upper left limb successfully covered the defect, and its blood supply was based on a random vascular network proximally and the left radial artery distally, which was anastomosed with the right thoracoacromial artery. The postoperative period was uneventful and the flap survived well apart from a small area on the proximal inferior part of the flap, which healed spontaneously by secondary intention. At the 7-month follow-up, no sign of tumor recurrence was noted.

In conclusion, the presented case attempts to expand the use of the upper limb fillet flap revealing its reliability as a retrograde flow flap with a secondary random pattern pedicle in reconstruction of complex thoracic wall defects.

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Treatment of Perforated Appendicitis in Children: Focus on Phlegmon

The management of perforated appendicitis in children has been studied extensively but continues to be actively debated regarding the roles of nonoperative management versus immediate appendectomy for this condition.^{1, 2} Comparisons between studies have always been hampered by variations in the definition of perforated appendicitis and its spectrum of clinical presentation, including the presence of a phlegmon and/or abscess, which many have classified together as "complicated" appendicitis. We know of no studies to date that have examined the complicated appendiceal phlegmon independently from abscess, although definitions have been proposed.³ Our study presents a singleinstitution retrospective review of initial nonoperative management versus immediate appendectomy for a large cohort of pediatric patients treated for perforated appendiceal phlegmon.

We retrospectively identified all patients (n = 106) who were diagnosed with perforated appendiceal

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phlegmon and treated at Boston Children's Hospital from 2007 through 2009. Patients with a phlegmon had an inflammatory mass with or without nondrainable defined fluid collection(s) that were less than 3 cm in diameter based on review of radiologic and/or operative findings at presentation. We excluded patients with a free perforation (free fluid with no defined collections) or those with an abscess (well-defined, fluid collection[s] greater than or equal to 3 cm in diameter). Clinical data were collected for all hospital encounters from initial presentation through the final outpatient visit as per our Institutional Review Board-approved study (M08-09-0435).

Patients were treated based on attending pediatric surgeon (n = 17) preference with either immediate surgery or initial nonoperative management with or without interval appendectomy six to eight weeks later after an initial course of intravenous (IV) antibiotics. At our institution during the study period, the clinical pathway for treatment of perforated appendicitis included placement of a peripherally inserted central catheter (PICC) line and treatment with at least ten days of IV antibiotics followed by oral antibiotics if needed. Surgical site infections (SSIs) were tabulated based on previously accepted definitions.⁴ All patients undergoing appendectomy were confirmed to have perforated appendicitis by review of surgical pathology.

During the study period, 99 patients had a free perforation; all but one of whom was treated with immediate surgery, whereas 83 patients presented with an abscess with 74 patients undergoing initial nonoperative management (data not shown). We present data on only the patients with phlegmon. The mean age was 9.7 years (standard deviation [SD] 4.4) with 54 per cent males and mean body mass index of 18.8 kg/m² (SD 3.6). The majority of patients were white (69%) with 7 per cent black and 9 per cent Hispanic/Latino. Seventy-two per cent had private insurance. Presenting symptoms included vomiting (72%), focal right lower quadrant pain (60%), diffuse abdominal tenderness (39%), nausea (26%), and diarrhea (22%). The mean duration of symptoms was 3.7 days (SD 6.0). On admission, the mean temperature was 37.6°C (SD 0.9) and mean white blood cell count was 15.6 (SD 4.9). At presentation, all 106 patients received abdominal imaging: ultrasound only (nine of 106 [8%]), computed tomography (CT) only (42 of 106 [40%]), and both studies (55 of 106 [52%]).

Sixty per cent (n = 64) of patients underwent initial nonoperative management with nine patients (14%) eventually requiring an interventional radiology (IR) drainage procedure preoperatively (Table 1), and one requiring two drainage procedures. After completion of the IV antibiotic course through a PICC line in the majority of cases (98%), 58 patients

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