

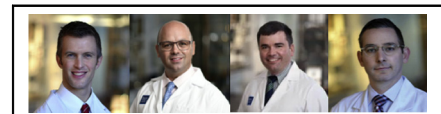
limitations associated with epidural catheters. Prophylactic therapy even may need to be extended in all patients from the typical initial inpatient period to a full 90 postoperative days, for instance, with enoxaparin or apixaban. The knowledge that mesothelioma holds the Guinness record for TEE only means that we must be Olympian in our efforts to treat and prevent this complication.

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Commentary: Focused attention on proactive identification of deep venous thrombosis after pleurectomy/decortication for malignant pleural mesothelioma

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CENTRAL MESSAGE

The patient's outcome correlates directly with the surgeon's attention to a myriad of minor details.

Cytoreductive surgery, either pleurectomy/decortication (PD) or extrapleural pneumonectomy (EPP), plays a central role in the multimodal treatment of malignant pleural mesothelioma. Importantly, the risk of postoperative complications after PD and EPP is significant—up to 60% after EPP.¹ In particular, deep venous thrombosis (DVT; incidence, 1.5%–6.4%) and pulmonary embolus (PE; incidence, 0.5%–4%) are especially important.² Early recognition is critical, given the high mortality rate of these complications. In 2 large series of EPPs, including one from Brigham and Women's Hospital,¹ PE was the most common cause of 30-day mortality, accounting for 30% of all deaths.^{1,3} Given this clinical significance, De Leon and colleagues⁴ report a DVT surveillance strategy with the aim of

detecting DVTs and PEs early, when the probability of mitigating their negative impact on patient outcomes is greatest. In this edition of the *Journal*, a prospective evaluation of their surveillance program is presented.

All patients had lower-extremity noninvasive studies at baseline preoperatively and every 7 days postoperatively (or earlier if there were signs of DVT or PE). After excluding 7 patients who were found to have a DVT on their preoperative lower-extremity noninvasive studies, the authors included 93 patients who underwent PD over a 27-month period in their final analysis. Despite using 5000 unit of subcutaneous heparin every 8 hours for prophylaxis, the authors found a 29% incidence of postoperative DVT (median time to event, 7 days; range, 1–14 days) and an 11% incidence of PE (median time to event, 7 days; range 1–23 days).

The value of this screening program is worth discussion. The increased DVT incidence noted in the present study of patients with PD (29%)⁴ is greater than their previous study of patients with EPP (6.4%),¹ likely due to surveillance bias. In the absence of a control group, it is unclear whether early detection of asymptomatic DVTs (33% of DVTs in this cohort) reduced the risk of PE. The hypothetical benefit of early detection must be balanced against hematologic complications from anticoagulation, which were

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comparable with other PD series. In a fiscally constrained health care environment, the cost of surveillance is important. However, the median cost of surveillance of 1 patient (\$2103) compares favorably with the average cost of intensive care unit care after a PE (\$9898 per day) and to the benefit of potentially reducing mortality rates from PE.

In the absence of a method to risk stratify patients, a DVT surveillance program is justified. The Caprini score is a common method for risk assessment of DVT. However, all patients in this study were high risk, and in this high-risk cohort, Caprini scores lacked discriminatory ability to differentiate which patients developed DVT and which did not.

The authors should be commended on their model approach to attacking a clinical problem. In 2004, they identified a complication that had a significant negative

impact on patient outcomes.¹ They developed a strategy to attempt to reduce the impact of this complication, prospectively studied it, and presented their results.

References

1. Sugarbaker DJ, Jaklitsch MT, Bueno R, Richards W, Lukanich J, Mentzer SJ, et al. Prevention, early detection, and management of complications after 328 consecutive extrapleural pneumonectomies. *J Thorac Cardiovasc Surg.* 2004; 128:138-46.
2. Groth SS, Burt BM, Sugarbaker DJ. Management of complications after pneumonectomy. *Thorac Surg Clin.* 2015;25:335-48.
3. Lauk O, Hoda MA, de Perrot M, Friess M, Klikovits T, Klepetko W, et al. Extrapleural pneumonectomy after induction chemotherapy: perioperative outcome in 251 mesothelioma patients from three high-volume institutions. *Ann Thorac Surg.* 2014;98:1748-54.
4. De León LE, Bravo-Iñiguez CE, Sam Fox S, Tarascio J, Freyaldenhoven S, Lapidot M, et al. Routine surveillance for diagnosis of venous thromboembolism after pleurectomy for malignant pleural mesothelioma. *J Thorac Cardiovasc Surg.* 2020;160:1064-73.

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Commentary: To scan or not to scan: No longer the question for mesothelioma patients after pleurectomy

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CENTRAL MESSAGE

Routine noninvasive screening for deep venous thrombosis should be performed in patients undergoing pleurectomy/decortication for mesothelioma.

Deep venous thrombosis (DVT) is a frequent complication in patients who undergo major surgical procedures, and screening pathways are a constant subject of quality improvement and cost-effectiveness analyses. Malignancy and high-risk surgical procedures are known to increase the risk of DVT significantly, but for patients with mesothelioma undergoing pleurectomy/decortication (P/D), the additive risks and optimal screening/surveillance

procedures are less well defined. De León and colleagues¹ from the Brigham and Women’s Hospital have provided an important contribution to our understanding of DVT and the need for screening after P/D in patients with mesothelioma in this issue of the *Journal*.

The authors present their series of 93 patients treated with P/D who participated in a DVT surveillance program. Asymptomatic patients were screened every 7 days with upper- and lower-extremity duplex examinations. Important findings demonstrated DVT in 27 (29%) patients, of whom 9 (33%) were asymptomatic. To give these results

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