

## Editorial

 Current Indications For Surgical Treatment of Lung Metastases<sup>☆</sup>


## Indicaciones actuales del tratamiento quirúrgico de las metástasis pulmonares

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Surgery for lung metastases continues to raise many questions and spark debate, despite numerous studies and technical advances. The potential of surgery for prolonging survival and even curing disease<sup>1</sup> has been emphasized, so the aim of these interventions is curative or to prolong life expectancy. In clinical practice, most metastases treated surgically are colorectal carcinoma, although surgery is an option in kidney tumors, breast cancer, head and neck tumors, malignant melanoma, non-seminomatous germ cell tumors, soft tissue sarcoma, and osteosarcoma.

For years, certain criteria have been required for the resection of lung metastases from extrathoracic tumor disease: feasibility of resecting all visible lesions, reasonable surgical risk, control of the primary tumor, and the absence of other metastatic sites. However, these criteria, specifically the histological type and the site of the primary tumor, now need some refinement. Very limited survival has been reported for melanomas, while for tumors of the colon and rectum, survival rates can be very high, with reports of 5-year survival in some series of up to 60%.<sup>2</sup> Criteria regarding control of the primary tumor and the absence of metastasis at other sites have also been revised. Some series have described patients in whom the primary tumor and metastases are discovered simultaneously, and both presentations are treated surgically. Patients with concurrent liver and lung metastases relatively frequently undergo surgery.<sup>3</sup>

Other prognostic factors include regional lymph node metastasis, which confers a poor prognosis; the number of metastases to be resected; disease-free interval; and the feasibility of resecting all metastases with sufficient margins in a single intervention. Other specific factors apply to certain cancers, such as presence of carcinoembryonic antigen in colorectal tumors, a marker for poor prognosis. In a recent study published by the Spanish Group for Colorectal Lung Metastases Surgery of the Spanish Society of Pulmonology and Thoracic Surgery (SEPAR), the most important factors were found to be disease-free interval, laterality, carcinoembryonic antigen levels, and the presence of nodal metastases.<sup>4</sup> Even

so, many patients who undergo surgery are poor candidates for such an intervention, and practitioners must always ensure that the decision to operate is reasonable.

The state of the evidence for this type of surgery has so far been based on non-randomized studies. The PulMiCC study attempts to examine the role of surgery in prolonging survival and to evaluate the possible drawbacks and benefits in terms of quality of life in patients undergoing these procedures.<sup>5</sup> While adjuvant chemotherapy is more common, it is also possible to administer induction chemotherapy followed by reassessment of the metastatic lung disease, an approach that may be justified in patients with a poor prognosis. Targeted therapies may also be an option.<sup>6</sup> Factors that worsen the prognosis of the patient, but do not rule out surgery, include the need to treat both primary tumor and metastases, and surgery of subsequent relapses. Some cases may undergo repeated interventions on successive occasions. Cases of 2, 3 or even more interventions have been reported.<sup>7</sup>

With regard to diagnostic studies, several papers have been published comparing the diagnostic safety of conventional computed tomography (CT) with that of high resolution CT and surgical palpation. According to Diederich et al.,<sup>8</sup> the sensitivity of helical CT for intrapulmonary nodules measuring more than 5 mm with histological confirmation of malignancy was 100%, and 69% for nodules measuring 5 mm or less. Only 48% of resected lesions were found to be metastasis, suggesting a high percentage of false positives. The low sensitivity of helical CT in the detection of metastatic nodules measuring less than 5 mm has been demonstrated in an experimental model.<sup>9</sup>

Positron emission tomography has been found to be useful in lesions with a diameter of 10 mm or more. However, this technique can sometimes be even less sensitive than helical CT,<sup>10</sup> and its value in sarcomas is also questionable. Added benefits include the possibility of detecting other thoracic and extrathoracic lesions, and in particular, mediastinal lymph node involvement or distant disease.<sup>11</sup>

The standard surgical technique is atypical pulmonary resection,<sup>12</sup> where the extent of the resection margin determines to a large extent the prognosis. Small nodules can be difficult to locate, and a thoracotomy may be required to detect them by lung palpation. Sometimes, the size or number of lesions or the site of the metastases may require anatomical lung resection,<sup>13</sup> the most common procedures being lobectomy and typical segmentectomy.

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Other options are enucleation using laser therapy, and non-surgical alternatives, such as radiation therapy, and microwave and radiofrequency ablation.

Years ago, thoracotomy was considered the best approach because it offered the possibility of revealing lesions that had gone undetected on chest CT.<sup>14</sup> Now, video-assisted thoracoscopy is increasingly used in this type of surgery, but despite good results,<sup>15</sup> no randomized studies of long-term survival are available.

The degree of scientific evidence for the surgical treatment of lung metastases is limited. Helical CT plays an important role in the extension study, while positron emission tomography is useful for lesions measuring more than 10 mm. With regard to the surgical technique, video-assisted thoracoscopy and atypical lung resection are the standard procedures, although small nodules may sometimes have to be resected using thoracotomy.

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