

There is now controlled trial evidence questioning the assumption that lung metastasectomy benefits patients from the Pulmonary Metastasectomy in Colorectal Cancer randomised controlled trial.

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Abstract

Pulmonary metastasectomy for sarcoma is surgery without proven benefit and in the light of the Pulmonary Metastasectomy in Colorectal Cancer randomised controlled trial it should be questioned.

488/500 allowed

We note the citation of our randomised controlled trial (RCT) by Yamamoto in their paper on pulmonary metastases.(1) The Pulmonary Metastasectomy in Colorectal Cancer (PulMiCC) randomised controlled trial (RCT) was not exceptional among surgical trials in having difficulty in recruitment. That is a feature of most RCTs in surgery, particularly if the trial challenges existing practice. PulMiCC was not terminated but was closed for analysis after discussion with Independent Data Monitoring Committee. It was published in 2020 with all 93 randomised patients. It showed no benefit in survival,(2) quality of life,(3) or health utility.(4)

Figure

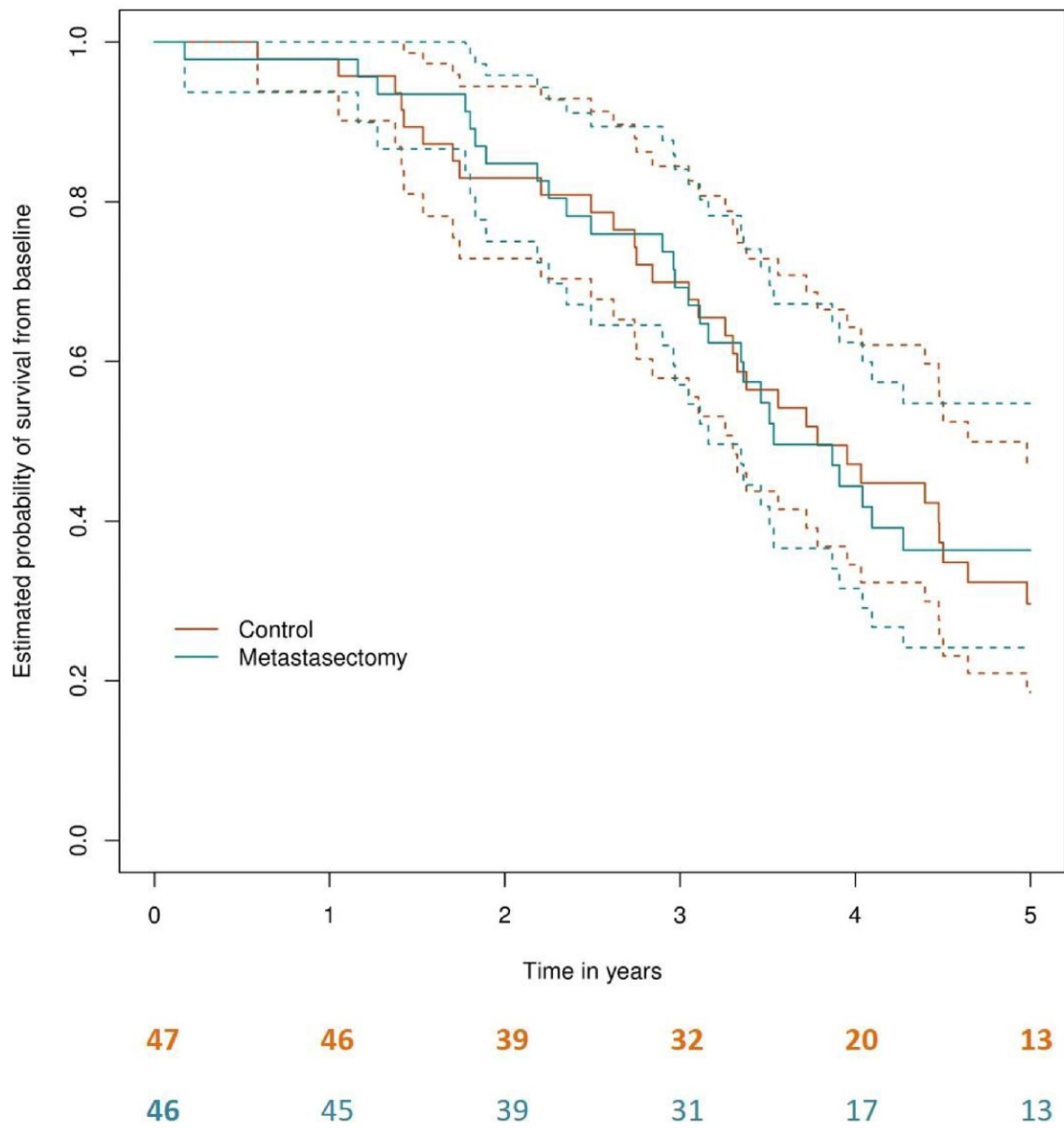
A small survival benefit cannot be excluded because with 46 and 47 patients each in the metastasectomy and control arms the confidence limits are wide. But we can be sure that the survival without metastasectomy is not close to the assumed “zero” and is significantly better than the more widely believed 5% ($P < 0.001$). (5, 6)

It is unfortunate that in writing their report the authors did not state the findings of the PulMiCC trial rather than dismiss it out of hand. The use of metastasectomy for sarcoma is not based on any RCT findings, or adequate control data, so its effectiveness must also be in doubt.(7-9) The word “benefit” is misleading in the title. A survival difference has never been proven.

Current practice is to select for metastasectomy those patients judged to be likely to survive longer because of their favourable features. Formalising this with a risk score, if it is implemented, will save more patients from unavailing surgery. But despite the impressive P value for correlation, inspection of the actual data—which the authors are commended for including—shows that it discriminates very poorly. In clinical practice it will be those two patients alive after more than 12 years, despite scores of 2 on a scale of 0-3, who will be pointed out each time they come to the clinic, feeding confirmation bias. But the possible net harm done to the large majority will not be recalled or even known.

Repeated metastasectomy for sarcoma only stops when the patients—who are often young—run out of lung capacity. It would be useful to review and report their mode of death, with and without metastasectomy. Is it the relentless growth of the pulmonary metastases that kills them? If so, there might be a calculable palliative benefit.

Reports of retrospective studies such as that of Yamamoto et al(1) should include a fair appraisal of available RCT evidence, rather than an uninformative dismissal. Patients should be told that there may be net harm for no survival advantage. A more scientific and compassionate approach would be to consider what are the obstacles to getting reliable evidence and seek to overcome them.(10) In PulMiCC, of patients who chose to make their own decision, 19/41(46%) chose to not have a metastasectomy, demonstrating group equipoise, while when the MDT took over the decision 77/78(99%) were sent for an operation.(3)



Legend to the figure

Kaplan-Meier survival in control and metastasectomy arms of the Pulmonary Metastasectomy in Colorectal Cancer randomised controlled trial.

References

1. Yamamoto H, Yamamoto H, Soh J. A Simple Prognostic Benefit Scoring System for Sarcoma Patients with Pulmonary Metastases: Sarcoma Lung Metastasis Score. *Annals of Surgical Oncology*. 2020.
2. Milosevic M, Edwards J, Tsang D, Dunning J, Shackcloth M, Batchelor T, et al. Pulmonary Metastasectomy in Colorectal Cancer: updated analysis of 93 randomized patients - control survival is much better than previously assumed. *Colorectal Dis*. 2020;22(10):1314-24.
3. Treasure T, Farewell V, Macbeth F, Monson K, Williams NR, Brew-Graves C, et al. Pulmonary Metastasectomy versus Continued Active Monitoring in Colorectal Cancer (PulMiCC): a multicentre randomised clinical trial. *Trials*. 2019;20(1):718.
4. Brew-Graves C, Farewell V, Monson K, Milosevic M, Williams N, Morris E, et al. Pulmonary Metastasectomy in Colorectal Cancer: Health Utility scores by EQ-5D-3L in a randomised controlled trial show no benefit from lung metastasectomy. *Colorectal Disease*. 2020.
5. Handy JR, Bremner RM, Crocenzi TS, Detterbeck FC, Fernando HC, Fidas PM, et al. Expert Consensus Document on Pulmonary Metastasectomy. *Ann Thorac Surg*. 2019;107(2):631-49.
6. Macbeth F, Fallowfield L. The myth of pulmonary metastasectomy. *Br J Cancer*. 2020;123(4):499-500.
7. Macbeth F, Treasure T. Metastasectomy for Sarcoma. *Clin Oncol (R Coll Radiol)*. 2015;27(7):428-9.
8. Treasure T, Macbeth F. Doubt about effectiveness of lung metastasectomy for sarcoma. *J Thorac Cardiovasc Surg*. 2015;149(1):93-4.
9. Treasure T, Moller H, Fiorentino F, Utley M. Forty years on: pulmonary metastasectomy for sarcoma. *Eur J Cardiothorac Surg*. 2013;43(4):799-800.
10. Treasure T, Baum M. An approach to randomization into surgical clinical trials. *Br J Surg*. 2017;104(1):11-2.