

# Treatment recommendations for stage I non-small cell lung cancer: does patient preference matter?

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Patients with stage I non-small cell lung cancer (NSCLC) are potentially cured by surgical resection. Over the last 10 years stereotactic ablative radiotherapy (SABR) has also become widely available as a treatment for some of these patients. The obvious benefits of SABR over surgery are the lack of immediate operative mortality risk and post-operative complications, but the concern is that this early advantage may be off-set by tumour recurrence and reduced longer term survival. A prospective evaluation of SABR given between 2004 and 2006 to 59 medically inoperable patients with tumours less than 5cm diameter, showed that primary tumour control was excellent at 97%. Unfortunately a substantial number of cases (22% at 3 years) developed disseminated recurrence; 3.5% had hilar or mediastinal recurrence and the majority developed more distant metastases soon after SABR, suggesting occult disease at the time of treatment (1). A retrospective propensity matched analysis of video-assisted thoracoscopic surgery (VATS) lobectomy *vs.* SABR in early stage NSCLC (64 patients in each group) supported this finding: loco-regional control was superior in the SABR group although overall survival was not significantly different (2).

Despite encouraging results from SABR, another more recent and much larger propensity matched analysis suggests that cancer specific survival may be better in patients who have sub-lobar thoracoscopic surgery compared with patients undergoing SABR (3). There are

no randomized trials between lobectomy and SABR in standard risk, medically operable patients and this may be predominantly due the lack of equipoise of opinion between the treatments, particularly in the surgical community. Four randomised controlled trials have failed to recruit to target, despite some being feasibility trials (4-7), and there are three further trials in progress or being set-up (8-10). One issue is the lack of an absolute definition of 'unfit for lobectomy' in lung cancer and there is no method precise enough to predict individual risk of death; mortality risk calculators only perform moderately when tested in independent datasets (11). Treatment recommendations for all patients should be based on multi-disciplinary team or tumour board discussion and should take into account objective measures of fitness and co-morbidity (12), and patients who are borderline in their fitness for surgery may therefore be in a position to choose between surgery and SABR.

Clinicians must work in partnership with their patients and should discuss with them their condition and treatment options in a way they can understand, and respect their right to make decisions about their care, if they so wish (13,14). When making treatment recommendations in early stage lung cancer it is therefore appropriate to ask the patient whether they have a preference for surgery or SABR after explaining the risks and benefits of each, but if the MDT recommend one treatment over another it is also

appropriate to give the patient that information.

Hopmans *et al.* ask which factors influence the likelihood of accounting for patient preference when recommending treatment in early stage NSCLC using data from a binary choice experiment which they conducted in 2015. A binary choice experiment is a quantitative method for valuing different factors that influence choices where individuals state their preferences in hypothetical scenarios. In the original study 126 clinicians were each given 16 hypothetical cases of stage I NSCLC, and asked for their recommended treatment choice between SABR and surgery (15). The cases varied by performance status, age, co-morbidity, COPD GOLD score, and stated patient preference. Clinicians (pulmonologists, surgeons and oncologists) were asked to record the level of certainty regarding their treatment recommendation. Treatment recommendations were more likely to be influenced by age, performance status and co-morbidity than by patient preference.

Hopmans and colleagues now report a secondary analysis of the same data looking at which factors affected whether the clinician took patient preference into account when making their treatment recommendation (16). In the main analysis three factors significantly affected whether the treatment recommendation was the same as patient preference: patient's age (treatment recommendations were more likely to be in line with the patient's preference in older patients), patient's treatment preference (more likely to be taken into account when patients preferred SABR), and clinician's certainty regarding the treatment decision (more likely to be in line with patient preference when clinicians were more certain about their recommendation). Surprisingly the clinician's belief about the decision making role (shared *vs.* informed *vs.* paternalistic) and equity of treatment options did not significantly affect the odds of recommending a treatment which was in line with patient's preference.

The uncertainty variable was dichotomised as the median was 2 and mean 2.48 (SD =1.40) on a scale of 1–7 (very certain to very uncertain). The majority of decisions were therefore relatively certain and the 3–7 group may be too heterogeneous to give a meaningful result. This may explain the somewhat counter-intuitive finding that patient treatment was more likely to be in line with patient preference when clinicians were more certain about their recommendation. The more logical scenario, as described elsewhere, is that clinicians who feel more uncertain about their recommendations tend to make recommendations in line with patient preference (17).

Several interactions are reported including that surgeons were more likely to follow patient preference if the preference was for surgery and oncologists follow patient preference if it is for SABR. However, from the original study we know that more oncologists recommended SABR and more surgeons recommended resection in all 16 hypothetical scenarios (15). It is surprising that 55% of clinicians indicated that they considered SABR and surgery equal treatment options for early stage lung cancer patients given the lack of trial data. Among clinicians who did not consider the two treatment options to be equivalent, treatment recommendation was more likely to follow patient preference if this was for surgery.

The authors acknowledge that the cases were entirely hypothetical with systematic variation of patient characteristics which may mean the results are not representative of a mix of real life treatment decisions. There was considerable variation in fitness of the hypothetical patients ranging from a 40-year-old with no co-morbidity and performance status  $\leq 1$  who prefers surgery to a 75-year-old with a co-morbidity index of  $\geq 3$ , performance status 2 and COPD GOLD score 2 who also had a preference for surgery. This first patient would probably not be considered borderline for surgery and all current clinical guidelines would recommend surgery in a patient with the specified features.

Patient preference is likely to be affected by patient demographic and co-morbidity as well as un-measurable variables such as attitude to risk and availability of a support network. It may be affected by clinician certainty or how they portray this, but also by the doctor-patient relationship and degree of trust they place in the clinician. This was evident in a qualitative study we undertook exploring attitudes to risk in patients with technically resectable lung cancer; a good impression of the surgeon was important in establishing trust and deferring decision making to the surgeon. This is illustrated by a quote from one participant talking about their surgeon: "And what struck me with him, when I shook hands with him at the end, it was a solid handshake" (18).

In the same study we found that some patients felt it should not be up to them to make a decision about treatment as this required an in depth understanding of their co-morbidities, measures of fitness (such as lung function) and treatment outcome data in order to weigh up the risks and benefits of surgery. These patients preferred a paternalistic attitude in decision making. Other authors have argued, however, that patients may feel unable rather

than unwilling to share in the decision making (19).

The hypothetical cases used by Hopmans *et al.* do not (and cannot) elicit the effects of these complex variables and further qualitative research is necessary to explore this, particularly as patient preference is highly unlikely to be a clear-cut binary variable with most patients preferring certain aspects of each treatment.

Health awareness campaigns, screening in those countries where it is available, and increased use of diagnostic CT in other areas such as colonoscopy and cardiac imaging, has led to the identification of a greater number of early stage lung cancers which could be treated by either SABR or surgery. These patients are a heterogeneous group but many have co-morbidities (for example related to smoking) which increase the immediate risks from surgery. This had led to an increasing number of patients for whom there is no single best treatment option and their preference becomes key to making a decision.

Hopmans and colleagues conclude that we should involve patients more often and ask for their preferences in making treatment decisions and that in some cases patient preferences are neglected. We must remember, however, that all patients and clinicians are individuals. Some people (both patients and clinicians) will naturally err on the side of low immediate risk (i.e., SABR) when making a treatment decision. Part of involving patients in decisions about their treatment should involve a dialogue about how much information they want to know and an assessment of how much, and in what format, they have capacity to understand and process. We should provide patients with the information and support they need to make a decision about their treatment but also respect those who prefer a paternalistic attitude and wish to be given a recommendation based on the facts available. Tumour boards or multi-disciplinary teams must consider medical reports on fitness of the individual patient and make an assessment of the likelihood of complications, and the likelihood of a good outcome from treatment based on research data as well as clinical experience.

At present, we do not have sufficient evidence on which to base a recommendation for SABR as equal to surgery as a curative treatment for all patients with stage I lung cancer. In the absence of good quality data on outcomes from SABR and direct comparison with surgery in an RCT, clinician opinion either from interpretation of the available data or personal experience of their own practise, will remain important. Individual opinions expressed within the MDT may therefore have considerable influence over

treatment decisions. The apparent strong preference for SABR by oncologists and resection by surgeons suggests that they may not be in a position to give an un-biased recommendation. Perhaps the best way to ensure patients are fully informed is to allow them to meet with both a radiation oncologist and thoracic surgeon prior to making a treatment decision. Some patients will like this and find it helpful in reaching a decision, however some will be overwhelmed by uncertainty and the feeling that they must decide for themselves without the necessary expertise.

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### Footnote

*Conflicts of Interest:* The authors have no conflicts of interest to declare.

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