

# Jacobs Journal of Clinical Case Reports

Case Report

## Pulmonary Resection for Primary Lung Cancer in a 97 year-old

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Received: 04-28-2016

Accepted: 07-06-2016

Published: 07-12-2016

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### Abstract

Current trends in increased life-expectancy and lung cancer incidence have led to a growing number of elderly patients with non-small cell lung cancer. Advances in surgical techniques and perioperative care have led to improved outcomes in octogenarians undergo pulmonary resection. There have been few reports, however, of surgical management in patients over the age of ninety years. Here we report the case of a fit 97-year-old gentleman who underwent thoracotomy and lingular-sparing upper lobectomy for the management of a T2a N0 squamous cell carcinoma. To the best of our knowledge, this is the oldest individual reported to have undergone anatomical resection for primary lung cancer. The patient was discharged on day 14 postoperatively with no significant post-operative morbidity. Although further evidence is required to establish the role of surgery for lung cancer in nonagenarians, pulmonary resection has been shown to be feasible in selected patients and should not be excluded on the basis of age alone.

### Background

Life-expectancy in developed countries is continuing to increase. The Office for National Statistics reported an average life expectancy of 18.5 years for men aged 65 and 21.1 years for women aged 65 in England and Wales in 2012 [1]. Given the aging population, we are likely to see an increase in the incidence of non-small cell lung cancer (NSCLC) in patients over the age of 90. Between 2009 and 2011 a total of 5133 new cases of lung cancer were reported in people over the age of 85 years in the UK [1]. In view of this, clinicians are likely to be facing more difficult decisions as to the management of lung cancer in elderly patients.

Surgical resection remains the treatment of choice for early lung cancer in fit candidates. The surgical community has recently come under some criticism as to whether less aggressive approaches are advocated in elderly patient groups. We would disagree with this assumption. Advances in pre and post-operative care, along with improved surgical techniques such as VATS pulmonary resection and sub-lobar anatomic resection has allowed an increase in surgical management of NSCLC in

an aging population.

Recently, a number of reports have looked at the feasibility of surgical management of NSCLC in octogenarians with the general consensus that age alone should not be a contraindication to surgery [2-4]. Moreover, studies have not demonstrated age to be an independent risk factor for surgical morbidity and mortality in patients over 80 years [5,6]. When considering nonagenarians, however, there are few cases documented in the literature [7,8]. Here we report the case of a 97 year old man with NSCLC successfully treated with anatomical pulmonary resection. To the best of our knowledge, this is the oldest individual reported to have undergone this lung cancer surgery.

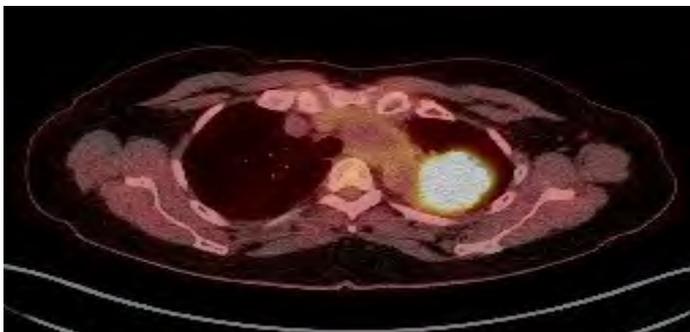
### Case Report

A 97 year old gentleman presented with a cough and was found to have an abnormal shadow on chest x-ray. Subsequent investigation with CT scan demonstrated a lesion within the apex of the left upper lobe (Figure 1), which was confirmed as a squamous cell carcinoma on CT-guided biopsy. Further, staging was carried out with a PET scan showing a T2b N0 M0 left

upper lobe tumour (Figure 2). In view of this, the patient was referred for surgical assessment.



**Figure 1.** CT Scan Left Upper Lobe Lesion.



**Figure 2.** PET Scan Left Upper Lobe Lesion.

At the review in the clinic the patient appeared to be a fit and active gentleman with a good exercise tolerance of a half mile without any shortness of breath and at least one flight of stairs. He had a past medical history of stroke four years ago with no significant residual neurology. He also had a history of hypertension, diabetes, raised cholesterol and chronic renal impairment. Creatinine was 131 $\mu$ mol/L with a GFR of 44ml/min. All other pre-operative blood tests were within normal range. Pulmonary function tests were reasonable with an FEV1 of 1.75L (75% predicted), an FVC of 2.5L (96% predicted) and a transfer factor of 68%.

Following counselling regarding management options and the risks involved the patient opted for surgical resection. A left lingular-sparing upper lobectomy was performed via a standard posterolateral thoracotomy incision. Lymph nodes were taken from stations 5, 6, 7 and 10. The lingular segment was seen to expand well at the end of surgery. Total operative time was ninety-six minutes with minimal blood loss (<100ml). Postoperative air leak was prolonged with drain removal on

day 10 without subsequent complication. In addition, the patient developed a pseudomonas urinary tract infection which required a course of antibiotics. The postoperative course was otherwise unremarkable and he was discharged home on day 14. Final histopathology demonstrated a 59mm squamous cell carcinoma, stage pT2a N0. The patient was reviewed in the outpatient clinic 6 weeks following surgery. At this time he had continued to make a good recovery with a return to his pre-operative exercise tolerance.

## Discussion

Lung cancer is the leading cause of cancer death in both men and women in the UK [1]. In the past, there has been a trend towards nonsurgical management or a less aggressive approach in elderly patients. This may have been due to a combination of concerns regarding the safety of pulmonary resection in this group and subsequent life expectancy. Given the aging population seen in the developed world we are likely to continue to see an increase in lung cancer morbidity and mortality in elderly patients.

In recent years the question of lung cancer surgery in octogenarians has been addressed by a number of groups [4, 9-11]. Early concerns regarding significantly higher morbidity and mortality in elderly patients, when compared to younger cohorts, has not been substantiated in these series. Anatomical resection has been performed with acceptable risk in patients with good performance status and preserved respiratory and cardiac function. Such reports have led to the consensus that pulmonary resection is safe and feasible in octogenarians and should, therefore, be an important option in carefully selected patients.

Here we present successful anatomical pulmonary resection for NSCLC in a 97 year old. Although there have been a number of studies looking at surgery in patients over eighty years, there have been few examples in the literature of lung cancer surgery in nonagenarians. Two case series from Japan have reported good outcomes with minimal morbidity and mortality but are only based on seven patients [7,8]. The patient in our case report had a fairly long hospital admission (14 days) but had no significant morbidity and has continued to make a good recovery in the community.

Advances in video-assisted thoracic surgical techniques, sub-lobar anatomical resections and improvements in pre and post-operative management have likely all contributed to an increase in surgical resection in the elderly. Although this patient underwent thoracotomy due to the size and position of the tumour, VATS should probably be advocated where possible to minimise surgical trauma. The need for lymph node dissection remains controversial in this population as mediastinal lymph node dissection has been identified as a risk factor for increased postoperative morbidity in octogenarians [12]. Other reports, however, found no difference in outcomes with and without lymph node dissection [13]. The outstanding question

to be answered still then is whether lymph node dissection has any bearing on survival outcomes in this cohort.

In conclusion, a significant number of studies have demonstrated the feasibility of anatomic lung resection in carefully selected octogenarians with acceptable morbidity and mortality [4,9,10,11,13]. Although there are only a few case reports of surgical management in patients over ninety years old it is fair to assume that similar criteria could be used for patient selection. The present case can be added to those reported in Japan where surgery has been successful in providing a curative option in nonagenarians. Surgical resection remains the gold-standard of care for curative intent in early lung cancers and should not be precluded based on age alone. There remain however a number of questions to be answered. Firstly, although life-expectancy data for octogenarians suggests that without intervention death is likely to be related to lung cancer rather than other causes, this has not been clearly demonstrated in nonagenarians. There also needs to be further investigation into alternative strategies such as RFA and radiotherapy in elderly patients for comparison with surgical intervention.

#### Conflict of Interest

None declared

#### References

1. National Life Tables, United Kingdom, 2010-2012. Office of National Statistics, 2014.
2. Okada A, Hirono T, Watanabe T. Safety and prognosis of limited surgery for octogenarians with non-small-cell lung cancer. *Gen Thorac Cardiovasc Surg*. 2012, 60(2): 97-103.
3. Guerra M, Neves P, Miranda J. Surgical treatment of non-small-cell lung cancer in octogenarians. *Interact Cardiovasc Thorac Surg*. 2013, 16(5): 673-680.
4. Port J, Kent M, Korst J, Lee PC, Levin MA et al. Surgical resection for lung cancer in the octogenarian. *Chest*. 2004, 126(3): 733-738.
5. Onder G, D'Arco C, Fusco D, Bernabei R. Preoperative assessment and risk factors in the surgical treatment of lung cancer: the role of age. *Rays*. 2004, 29(4): 407-411.
6. Nugent WC, Edney MT, Hammerness PG, Dain BJ, Maurer LH et al. Non-small cell lung cancer at the extremes of age: impact on diagnosis and treatment. *Ann Thorac Surg*. 1997, 63(1): 193-197.
7. Iwata T, Inoue K, Nishiyama N et al. Lung cancer surgery in nonagenarians. *Annals of Thoracic and Cardiovascular Surgery*. 2008; 14(5): 314-318.
8. Miyazaki T, Yamasaki N, Tsuchiya T, Matsumoto K, Doi R et al. Pulmonary resection for lung cancer in nonagenarians: A report of five cases. *Annals of Thoracic and Cardiovascular Surgery*. 2014, 20(Suppl): 497-500.
9. Pagni S, Federico JA, Ponn RB. Pulmonary resection for lung cancer in octogenarians. *Ann thorac Surg*. 1997, 63(3): 785-789.
10. Hanagiri T, Muranaka H, Hashimoto M, Nagashima A, Yasumoto K et al. Results of surgical treatment of lung cancer in octogenarians. *Lung Cancer*. 1999, 23(2):129-133.
11. Aoki T, Yamato Y, Tsuchida M, Watanabe T, Hayashi J et al. Pulmonary complications after surgical treatment of lung cancer in octogenarians. *Eur J Cardiothorac Surg*. 2000, 18(6): 662-665.
12. Chida M, Minowa M, Karube Y, Eba S, Okada Y et al. Worsened long-term outcomes and postoperative complications in octogenarians with lung cancer following mediastinal lymph-node dissection. *Interact Cardiovasc Thorac Surg*. 2009, 8(1): 89-92.
13. Muraoka M, Oka T, Akamine S, Tagawa T, Sasaki N et al. Surgical treatment for lung cancer in octogenarians. *Surgery Today*. 2005, 35(9): 725-731.