Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

the healthcare impact of this pandemic will have an effect on thoracic cancer patients' mortality. **Keywords:** COVID-19, lung cancer, hospital

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Global Impact of COVID-19 on NSCLC Surgery: Initial Analysis of the CovidSurg-Cancer Study

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Introduction: The CovidSurg portfolio of studies collected data on 190,261 patients from 2006 hospitals in 120 countries, including all surgical specialties. We report data regarding surgery for NSCLC in patients at risk of perioperative COVID-19 infection and in COVID-19 affected thoracic surgery hospitals. **Methods:** Anonymised data, entered prospectively into a web-based database for a three month period in each unit from the first impact of COVID-19, were retrieved. Comparisons were made between patients developing perioperative COVID-19 infection, postoperative pulmonary complications (PPCs) (a composite outcome measure of pneumonia, ARDS, respiratory failure and need for respiratory support), and 30-day mortality. Univariate analyses examined differences between groups. Stepwise multivariate binary logistic regression determined independent predictors. **Results:** 1,486 patients underwent NSCLC surgery in 83 hospitals across 28 countries between March and July 2020. Preoperative factors associated with perioperative COVID-19 included male gender, underlying respiratory disease, advanced cancer stage, open surgery and absence of a dedicated COVID-free surgical pathway. Perioperative COVID-19 was associated with a 30-day mortality rate of 26%, higher re-operation rate, critical care utilisation and complications (Table 1). In multivariate analyses (Table 2), independent predictors of perioperative COVID-19 included male gender (OR 2.06), pre-existing respiratory disease (OR 2.82), open surgery (OR 2.32), and the lack of a COVID-19 free surgical pathway (OR 3.07). The strongest independent predictor of PPCs was perioperative COVID-19 (OR 7.4), which also predicted 30-day mortality (OR 11.6, Table 2).

Variable	N	Peri-operative 30-day COVID-19 Infection: No, N = 1 412[1]	Peri-operative 30-day COVID-19 Infection: Yes, N = 74[1]	p-value[2]	q-value[3]
Sex	1 486			**0·005**	0·007
Female		733 (52%)	26 (35%)		
Male		679 (48%)	48 (65%)		
COPD	1 486	398 (28%)	32 (43%)	**0·005**	0·007
Respiratory Disease	1 486	478 (34%)	38 (51%)	**0·002**	0·003
Previous COVID-19	1 431			**<0·001**	<0·001
No		1 378 (99%)	33 (82%)		
Probable - clinically suspected		6 (0·4%)	3 (7·5%)		
Yes - proven with laboratory test or CT thorax		7 (0·5%)	4 (10%)		
Pre-op Non-Invasive Ventilation	1 460	0 (0%)	2 (4·2%)	**0·001**	0·002
Pathological Stage	1 262			**0·019**	0·019
Stage 0		10 (0·8%)	1 (2·6%)		
Stage 1		799 (65%)	16 (42%)		
Stage 2		203 (17%)	9 (24%)		
Stage 3		188 (15%)	11 (29%)		
Stage 4		24 (2·0%)	1 (2·6%)		
Approach	1 460			**0·002**	0·003
Open		395 (28%)	21 (44%)		
VATS/RATS		945 (67%)	21 (44%)		
VATS/RATS converted to Open		72 (5·1%)	6 (12%)		
Pathway	1 486			**<0·001**	<0·001
COVID-19 free surgical pathway		371 (26%)	5 (6·8%)		
Hospital with no defined pathway		1 041 (74%)	69 (93%)		
COVID-19 CRITCON level	1 460			**0·002**	0·003
Level 0 - Normal		218 (15%)	17 (35%)		
Level I - Low surge		508 (36%)	11 (23%)		
Level II - Medium surge		537 (38%)	14 (29%)		
Level III - High surge		149 (11%)	6 (12%)		
COVID suspected at the time of surgery?	1 459	31 (2·2%)	6 (12%)	**<0·001**	0·002
Reoperation	1 486	68 (4·8%)	9 (12%)	**0·012**	0·013
Post-operative Level of Care	1 460			**0·015**	0·015
Enhanced Ward Monitoring		285 (20%)	5 (10%)		
HDU		361 (26%)	11 (23%)		
ICU		231 (16%)	16 (33%)		
Ward		535 (38%)	16 (33%)		
30-day Mortality	1 486			**<0·001**	<0·001
Alive		1 402 (99%)	55 (74%)		
Dead (0-7 days post-operative)		1 (<0·1%)	3 (4·1%)		
Dead (8-30 days post-operative)		9 (0·6%)	16 (22%)		
Length of Hospital Stay (days)	1 460	5·00 (3·00 – 7·00)	9·00 (5·00 – 14·25)	**<0·001**	<0·001
Acute Kidney Injury	1 486	22 (1·6%)	8 (11%)	**<0·001**	<0·001
Acute Respiratory Distress Syndrome	1 486	6 (0·4%)	10 (14%)	**<0·001**	<0·001
Pneumonia	1 486	118 (8·4%)	26 (35%)	**<0·001**	<0·001
Post-operative Pulmonary Complication	1 486	139 (9·8%)	34 (46%)	**<0·001**	<0·001
Pulmonary Embolism	1 486	5 (0·4%)	3 (4·1%)	**0·006**	0·007
Sepsis	1 486	19 (1·3%)	7 (9·5%)	**<0·001**	<0·001

[1] n (%); Median (IQR)
[2] Pearson's Chi-squared test; Fisher's exact test; Wilcoxon rank sum test
[3] False discovery rate correction for multiple testing

Figure 1. Significant Pre and Post-operative Factors stratified by Post-operative COVID-19 Infection (Univariate Modelling)

Conclusion: Modifiable factors exist which are associated with a lower rate of COVID-19. These include utilisation of COVID-19 minimised pathways and avoidance of thoracotomy. Analysis of COVID-related protocol deviations and longer term outcomes is ongoing. **Keywords:** Surgery, non-small cell lung cancer, covid-19