Science Letter

The effects of COVID-19 on hip fracture management and mortality in a regional trauma centre

Older patients and those with comorbidities have worse outcomes from both hip fracture and COVID-19. Furthermore, testing positive for COVID-19 can increase mortality for any surgical procedure [1]. In anticipation of the initial COVID-19 surge, theatre staff were re-allocated in order to meet the expected increase in local critical care bed requirements, resulting in reduced capacity to deliver surgical services.

We analysed the impact of the initial COVID-19 surge on the hip fracture population in a high-volume tertiary trauma centre (approximately 900 hip fracture surgical procedures per year) in the UK [2]. The study included a 2-month period following the onset of lockdown from 24 March 2020 until 23 May 2020, and we compared this with the same 2-month time period in 2015–2019. This included patients aged > 60 years who were admitted with a hip fracture. It did not include patients with high-energy injuries, pathological fractures and those who underwent surgery in other units before admission. Data were retrieved from the hospital's inpatient fracture database, the Fracture Outcomes Research Department, which contributes to the National Hip Fracture Database [2]. The study was approved by the Belfast Trust's Quality Improvement and Patient Safety Department.

During the study period in 2020, 126 hip fracture patients were included, compared with an average of 115 patients per year in 2015–2019. This suggests that, despite nationwide advice to avoid unnecessary social contact and remain at home where possible, a cohort of patients continued to fall and sustain hip fractures. Looking specifically at the 2020 cohort (Table 1), 68.0% of patients were aged 80 or above, and 86.9% of those operated on were deemed ASA physical status 3 or worse. These patients clearly remain at significant risk of sustaining a fall and subsequent hip fracture, despite the COVID-19 lockdown restrictions.

Table 1 Baseline characteristics, relevant outcome and anaesthetic details for the 2020 and 2015–2019 (5 year) groups. Values are number (proportion) or median (IQR [range])

	2020 n = 126	**2015–2019 n = 574**	**p value**
Sex; female	93 (73.8%)	429 (74.7%)	0.82
Age; years	83 (76–88 [60–99])	84 (77–89 [60–102])	
Operated	123 (97.6%)	562 (97.9%)	0.84
Non-operated	3 (2.4%)	12 (2.1%)	
ASA physical status			
1	0	3 (0.5%)	
2	13 (10.6%)	84 (14.9%)	
3	66 (53.7%)	320 (56.9%)	0.11
4	41 (33.3%)	152 (27.0%)	
5	3 (2.4%)	3 (0.5%)	
Time to theatre			
Under 48 h	79 (64.2%)	301 (53.6%)	0.03
Over 48 h	44 (35.8%)	261 (46.4%)	
Anaesthetic type			
General	15 (12.2%)	174 (31.0%)	0.0001
Spinal	107 (87.0%)	388 (69.0%)	
30-day mortality	8 (6.3%)	29 (5.1%)	0.71
30-day mortality in operated patients	5 (4.1%)	20 (3.6%)	1.00
30-day mortality in non-operated patients	3 (100.0%)	9 (75.0%)	1.00

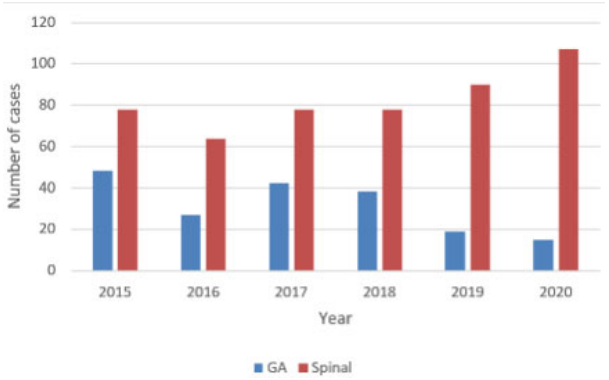

Figure 1 Type of anaesthesia in operated patients 2015–2020

Aerosol generating procedures were avoided where possible in 2020, with an increased use of neuraxial over general anaesthesia demonstrated ($p < 0.001$) [3]. However, this result may be confounded due to a general trend towards neuraxial anaesthesia within the department in the last 5 years (Fig. 1).

Time to theatre improved during the pandemic, despite a reduction in theatre capacity (time to theatre < 48 h was 64.2% in 2020 compared with 53.6% in 2015–2019, $p = 0.03$). The 30-day mortality in 2020 was also similar to that of 2015–2019 for both surgically and conservatively managed patients. This highlights the ability to maintain high standards of care despite the organisational changes made during surge planning.

A total of 7.1% patients tested positive for COVID-19, all of whom were operated on (9/126 positive, 113/126 negative, 4/126 no result). The 30-day mortality rate of COVID-19-positive patients was 22.0%, compared with 2.7% in COVID-19-negative patients ($p = 0.05$) and corroborates broadly with the findings of a number of other publications [4,5]. [Correction added 18 January 2021, after first online publication: the first sentence in this paragraph has been corrected in this version]

Our results demonstrate the ability to maintain an effective hip fracture service with largely unchanged outcomes during the height of the COVID-19 pandemic. Strengths of the study included robust follow-up and the ability to compare our results with retrospective pre-pandemic data. There were substantially lower numbers of patients with COVID-19 in Northern Ireland when compared with the rest of the UK, which may limit the generalisability of the results; however, it is possible that these lower numbers may more closely represent future surges. Our study showed increased mortality in COVID-19-positive patients undergoing surgical management, which may raise ethical considerations for this cohort. The inclusion of only nine COVID-19-positive patients and the high rates of spinal anaesthesia may limit conclusions, with further research warranted to answer questions such as the timing of surgery in COVID-19-positive patients who require hip fracture surgery.

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