IMPACT International Multicentre Project Auditing COVID-19 in Trauma & Orthopaedics

IMPACT-Restart Report on Elective Orthopaedic Services:

Risk of Postoperative COVID-19 Following Hip & Knee Arthroplasty

A nationwide multicentre cohort study

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Aim

To assess the incidence of postoperative COVID-19 within 30 days of undergoing hip or knee arthroplasty surgery prior to the suspension of elective orthopaedics services due to the pandemic in March 2020.

We assessed the period when elective orthopaedic services were delivered without widespread enhanced infection prevention and control precautions, and during which the COVID-19 pandemic in Scotland was at its peak:

- Highest community prevalence of COVID-19
- Highest number of COVID-19-positive hospital inpatients
- Highest COVID-19 ICU bed occupancy
- Highest rate of excess deaths & deaths attributed to COVID-19

Methods

This national multicentre retrospective cohort study included all patients undergoing primary or revision hip or knee arthroplasty in all 17 Scottish hospitals during March 2020.

Study period: 1st – 31st March 2020
Follow-up: 60 days postoperatively (minimum)

Data were collected using a bespoke data-validated audit tool to ensure a high level of completion and reliability.

Variables collected:

- *Demographics:* *Age, sex*
- *Comorbidities:* *Body mass index, diabetes mellitus, ASA grade*
- *Surgical Factors:* *Procedure, primary/revision, length of stay (LoS)*
- *COVID-19 Status:* *Pre- & post-surgery)*
- *Outcomes:* *Mortality (30-day postoperative)*

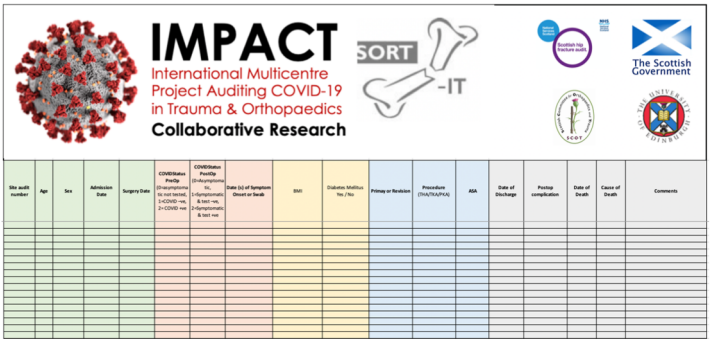


Fig 1. IMPACT Restart Audit Data Collection Tool

Results

Five out of 1072 (0.5%) patients tested positive for SARS-CoV-2 postoperatively (antigen PCR swab: n=4; serum antibody: n=1).

Mortality associated with COVID-19:

There were three (0.28%) deaths in the cohort within 60 days of surgery. Overall COVID-19 mortality rate was 0.09% (n=1/1072). Mortality in patients with postoperative COVID-19 was 1/5 (20.0%).

Length of Stay predicted COVID-19:

When adjusting for confounders increased LoS (p=0.022) was the only significant factor associated with postoperative COVID-19. Length of stay greater than 3 days was a reliable predictor of postoperative COVID-19 status (AUC 81% (95% CI 64 to 98, p=0.018)).

Fig 2. Receiver operating characteristic curve for length of hospital stay as a predictor of developing COVID-19 postoperatively.

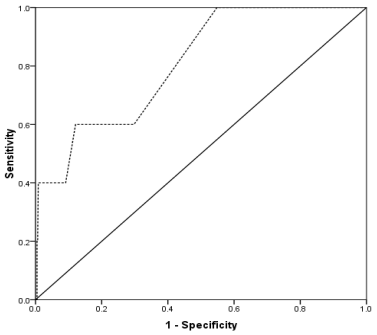
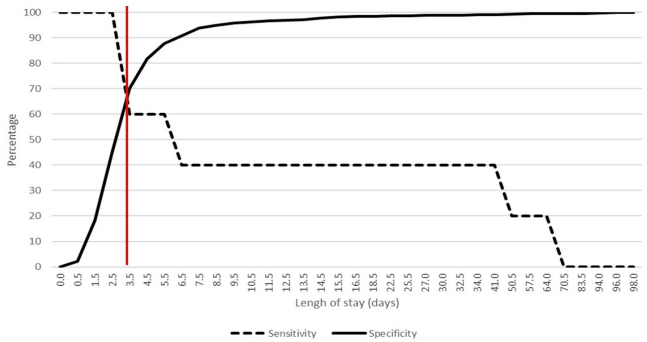


Fig 3. Sensitivity and specificity plot predicting postoperative COVID-19 status according to length of hospital stay.



Conclusion

COVID-19 incidence was 0.5%; this may have been up to 1.0% when accounting for patients not re-presenting to services.

LoS >3 days associated with higher risk of developing COVID-19.

Overall COVID-19-related mortality was low (0.09%) however in patients testing positive for postop COVID-19 mortality was 20.0%.

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